1998

The effects of harsh parenting and aggressive behavior on adolescents' externalizing problem behavior

Kee Jeong Kim
Iowa State University

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

The effects of harsh parenting and aggressive behavior on adolescents' externalizing problem behavior

by

Kee Jeong Kim

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Human Development and Family Studies

Major Professor: Jacques D. Lempers

Iowa State University

Ames, Iowa

1998

Graduate College
Iowa State University

This is to certify that the Doctoral dissertation of

Kee Jeong Kim

has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Major Professor

Signature was redacted for privacy.

For the Major Program

Signature was redacted for privacy.

For the Graduate College

DEDICATION

To

My mother, Jung Hee Kim, for

providing me a background to become a family researcher in the form of letting me experience the crucible family life event during the transition to adolescence

To

Dr. Jacques Lempers, my major professor, for

his unconditional support, unlimited endurance, and endless encouragement that ultimately rescued me from the insecure moments and made this research complete

To

Dr. Fred Lorenz, my role model in research, for

his enormous and pervasive impact on my research that stimulated and led me toward a multidimensional perspective and will be alive in the rest of my research work

&

To

Dorothy Engelstad, a fantastic mother figure, for

her everlasting love, rich friendship, and fabulous hospitality toward an international student throughout her entire graduate program

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

There are so many incredible people who influenced me pervasively in my research work and supported me unconditionally and continuously. Without their tremendous support, love, encouragement, and confidence in me, I would not have been able to accomplish what I did today. I wish to extend my deep gratitude to the following very special people in my life:

To Dr. Jacques Lempers, my major professor, for his generosity and wisdom, for his broadly ranging support from the selection of a lawyer, to the provision of data set for this research, and for his very patient supervision of this entire dissertation. I am very grateful to him for assuring me constantly that I can complete this dissertation. Thank you very much for being there for me at the right moment and at the right place and for accepting my plea of becoming my major professor without the slightest hesitation. Thank you for not reacting harshly when I was so aggressive. Cheers, Dr. Lempers.

To Dr. Fred Lorenz, my role model in research work, for his tremendous influence not only in technical data analyses but also in my overall research philosophy and attitude. I finally experienced how supremely a person can impact other individuals although the person may not be aware of it. I was very fortunate to be in several of his classes; especially, the one class of his which provided me with a research inquiry that came to be alive in this dissertation. I acknowledge my personal debt to him for welcoming my countless visits every single time I came to him even when he was profoundly occupied with other important things of his own; rather willingly discussed with me about the matters that I brought in. His influence will be reflected in my further research work and I will do my best to be a professor just like him. I will miss your wonderful sense of humor a lot, Dr. Lorenz.

To Dr. Peter Martin, for his tremendous support and supervision in the first year of my doctoral program. His special emphasis in publication and presentation at conferences ultimately let me have the wonderful experience of developing an international social network and of conferring widely with researchers and scholars whose work is on the cutting edge. "Beyond the cutting edge," his famous phrase, I will remember for the rest of my career.

To Dr. Joyce Mercier, a terrific company in "the zone," for her warmth and endless encouragement that I have received from the first semester in the graduate program up to this point. Her understanding, caring, and respect for students are the things that I must learn. Thank you very much for sharing your expertise in gerontology with me.

To Dr. Linda Enders, for her unlimited support and inspiration of the marriage and family therapy. I was emotionally moved whenever she cleared out her own schedule to arrange my oral exams: one for the preliminary exam and the other for the final exam. I cannot thank you enough for prioritizing my situation.

To Dr. Alice Thieman for her expertise in parenting. Her flexibility and willingness to accommodate with my tight schedule made it possible for me to finalize and resolve things in my hand. Thank you so much for your insight and input in my research.

To Dorothy Engelstad and in the memory of her husband, Orlyn, for their treating me as one of their family members during the last four years. I have no clue how I can possibly acknowledge all nice things that Dorothy has done for me: inviting me for countless meals at her place, especially Thanksgiving dinners for four consecutive years, taking me to malls, ballets, Norwegian festival in Decorah, beautiful churches, teaching me how to make her special peach pie, driving 3 hours each way to pick me up and to take me back to Kansas City from her house at the Lake of the Orzarks, and sending me such nice letters, cards, postcards, and recently, lots of e-mails to encourage me. Please let me

have an opportunity to do something nice for you. I wish I could figure out what the nice thing would be before not too long. Lastly, Orlyn, I miss having a chess game with you. Thank you for being very friendly and loving me in the way you did.

To Delfino, for his occasional assistance in statistical analyses while he was taking his preliminary exams. We developed our friendship when I taught Korean to adopted children from Korea at Meeker elementary school during the first two years in the graduate program while he taught Spanish there. At that point, I did not imagine that I would have your support in data analyses for my dissertation. Thank you for your willingness to help me out.

To Sherry, Sherry, and Anthony, a perfect example of wonderful multigenerational family, for their unconditional love since I met the first Sherry for the first time on the T.V. monitor in ICN class. Especially, Anthony has brought me new experiences of American culture such as trick or treat for the Holloween. I have always fallen short in returning the love that your whole family is giving to me. I am so lucky to have friends like you.

To Kristi, for her hospitality when I was in Heidelberg, her expertise in traveling around Europe, and her support as a colleague. She must be the one who can imagine most what it is like to finish the whole graduate program. I hope you are enjoying your first appointment at Cornell University.

To Bing, a wise marriage and family therapist, for his caring about my frustration and problems, and "overestimating" my potential. I hope our dream of developing a marriage workshop in Korea together will come true very soon.

To Sang-Sook, Hyeon-Sook, and Seung-Bin, for their almost "illogical" confidence in me and in my future. Whenever you guys told me during college school life, "Hey, let us have a friend who is a professor," that statement sounded very stressing to me from time to time since I did not know I would be able to come this far. I now realize that it was all of

you who paved a path for me toward this direction and I just walked following the path. Throughout college life, we always dreamed about doing something "BIG." Our dream finally has come true as a fashion designer, as an international translator, as a commercial copywriter, and as a Ph.D. I feel so blessed to have great friends like all of you.

To Eva, Livio, Ninfa, and Gaetano, for their love and friendship. I still cannot believe how fast we became friends. Thank you for your traditional recipe of Italian pasta, and for those prestigious postcards from Italy and from Egypt. I will never forget the wildest birthday party in my life that you offered. I miss Italian espresso with chocolate cream sandwiches for breakfast. I am looking forward to seeing all of you in Sicily next summer!

To my relatives for their bottomless love and belief in me. In particular, one of my aunts and her two sons, Hyeon-Wook and Hyeon-Jo, for their very special respect for me; another aunt and her son, Sun-Ki, for inspiring me to develop a research idea for this dissertation through showing me very honestly the growing conflict between the mother and the son throughout his storming developmental and cultural transitions. Listening to how difficult and frustrating it is to raise an adolescent displaying problem behaviors was a good experience for me in terms of being aware of the potential research.

In the memory of Dr. Dahlia F. Stockdale, who supervised my master's program, for her diverse support and love that will be everlastingly remembered. I still feel your warm hand that would not release my hand. If I knew that that day was the last time when I was able to talk with you, I would have stayed longer than I did. Throughout this whole process of dissertation writing, I have thought about you more often than I thought I would. Dahlia, you will be remembered as my major professor forever no matter where I would be and no matter what I would do. I will try to interact with students like you did for me: promoting students to be improved not with disciplines or pointing out shortcomings but with constant

praises and acknowledging good things about them. Thank you very much for always pointing out good things about me. I miss you much.

Finally, to my mother, Jung Hee Kim, for her "unconditional" love and her strong will to raise her only child distinguished from thousands and thousands of other children. Your persistency in achieving what you want and survivorship in any circumstances are the last things that I wanted to take upon in my character. I deeply thank you for being very courageous in making the extraordinary decision in your life. The decision changed my whole life and those earlier rough days due to the decision made me what I am today. What I have learned so far is that without having unusual experiences, which most people do not have in their life time, no one can truly stand out from the majority. As you said, we did not look back even a single time; we only have looked ahead only for the moments just like this. Mom, it is so exhilarating to acknowledge that we are the "WINNERS"!

ABSTRACT

There is a growing consensus that aggressive behaviors are elicited and promoted by the reciprocity between parents and children. Control systems theory (Bell, 1977) argues that children's genetically driven predispositions elicit negative parenting which in turn promotes children's aggressive behavior, while coercion theory (Patterson, 1982) argues that inept parental disciplinary tactics promote children's aggressive behavior. Although the notion of reciprocity has been widely acknowledged, research studies that examined how earlier experiences of negative reciprocity affect later externalizing problem behaviors in a comprehensive theoretical model have been relatively sparse. Using a three-year longitudinal data set including 398 two-parent families from the midwest, the present study developed a conceptual model for testing both cross-lagged and contemporaneous effects of parent-child reciprocity on adolescents' externalizing problem behavior. Structural equation modeling analyses revealed (1) high stability of harsh parenting, aggressive behavior, and externalizing problem behavior, (2) a significant prediction by Times 1 and 2 boys' earlier aggressive behavior of Times 2 and 3 mother's harsh parenting, respectively, (3) a significant role of fathers' harsh parenting in developing both male and female adolescents' externalizing problem behavior, and (4) both cross-lagged and contemporaneous positive relationships between aggressive behavior and externalizing problem behavior. However, there were no significant differences in terms of the cross-lagged versus the contemporaneous effects of the reciprocity between harsh parenting and aggressive behavior on later externalizing problem behavior. The finding of the elicitation of maternal harsh parenting due to adolescent males' aggressive behaviors provides support for control systems theory; the finding of an association between paternal harsh parenting and adolescents' externalizing problem behavior supports coercion theory.

The significant positive relationship between aggressive behavior and externalizing problem behavior added empirical evidence to the ongoing controversy in the literature on whether the relationship constitutes what Lytton (1990) calls "the primacy of a child effect" or simply demonstrates the continuity of behavior over time. With respect to the finding that male adolescents' aggressive behavior influenced maternal harsh parenting, future studies need to expand the examination of the reciprocity in the parent-child dyad by including parental psychological well-being in addition to developmental outcomes of children.

CHAPTER 1

INTRODUCTION

Aggressive behaviors have been of substantial interest to researchers since their high stability (Olweus, 1979) and vigorous associations with maladjustment behaviors in later life-span (Lerner, Hertzog, Hooker, Hassibi, & Thomas, 1988) have been recognized as challenging problems by parents, educators, and society. Researchers have devoted themselves to identifying how children's behavioral problems are elicited, progressed, and stabilized (e.g., Lytton, 1990, Patterson, 1982, Vuchinich, Bank, & Patterson, 1992).

In terms of elicitation, there has been a controversy whether aggressive behaviors are due to genetics, environments, or the interaction of the two. Despite the controversy, researchers have agreed that aggressive behaviors are multiply determined. Numerous studies have investigated parental influences on aggressive behaviors (Patterson, 1986; Wasserman, Miller, Pinner, & Jaramillo, 1996). In recent studies, the bidirectionality of the parental influences on children and children's effects on parents have been heavily emphasized more than ever before. However, the question is who initiates encounters between parents and children? There is no agreement among researchers and several theoretical perspectives have been proposed.

Control systems theory argues that children's genetically driven predispositions elicit negative parenting (Bell, 1977; Bell & Chapman, 1986; Lytton, 1990). However, researchers have not overlooked other determinants of negative parenting such as financial pressure on parents (Clark-Lempers, Lempers, & Netusil, 1990; Conger, Conger, Elder, Lorenz, Simons, & Whitebeck, 1992, 1993; Conger, Lorenz, Elder, Melby, Simons, & Conger, 1991; Lempers & Clark-Lempers, 1990, 1997; Lempers, Clark-Lempers, & Simons, 1989; McLoyd, 1989; Skinner, Elder, & Conger, 1992), stress at work (Goldberg, Greenberger, & Nagel, 1996;

Repetti & Wood; 1997), poor marital quality (Belsky, Youngblade, Rovine, & Volling, 1991; Brody, Arias, & Fincham, 1996; Deal, 1996; Gable, Belsky, & Crnic, 1992; Kerig, Cowan, & Cowan, 1993; Kurdek, 1996; Sheeran, Marvin, & Pianta, 1997), depression (Belsky, Crnic, & Woodworth, 1995; Kendler, Sham, & MacLean, 1997; Peterson, Smirles, & Wentworth, 1997; Russell, 1997), and lack of social and spouse support (Simons, Lorenz, Conger, & Wu, 1992 ; Simons, Lorenz, Wu, & Conger, 1993).

There is a growing consensus that children's aggressive behaviors are associated with parents' ineffective discipline practices (Loeber & Dishion, 1983). According to coercion theory, dysfunctional parental discipline (i.e., power-assertive practices) fosters children's negative aggressive reactions, and parents become irritated by the aggressive reactions of their children; in turn, their parenting practices become more negative (Patterson, 1982). The continuation of this negative interactive pattern escalates toward a destructive relationship, and so, children's antisocial behaviors are promoted (Patterson, 1982, 1986). Even worse, children who had early dysfunctional relationships with parents during their childhood are more likely to have troubles developing healthy peer relationships during adolescence (Dishion, 1990).

Children's behavioral problems should be understood within the framework of the bidirectionality of the parent-child relationship. Although the notion of bidirectionality has been well recognized since the pioneer work by Bell (1968), empirical examinations of reciprocity has been limited. Developments in statistical analyses (e.g., structural equation modeling) finally have allowed researchers to examine bidirectionality; however, the number of studies is still sparse.

Among one of a few empirical research studies examining reciprocity, Vuchinich et al. (1992) investigated boys' antisocial behaviors, parenting discipline practices and peer relations in a 2-year longitudinal study. Employing structural equation modeling, the study

found concurrent effects but no cross-lagged effects of reciprocity: preadolescent boys' antisocial behaviors at the second wave of measurement decreased the quality of parenting discipline at the same point in time, but the antisocial behaviors at the first wave of measurement did not affect the quality of parenting discipline at the second wave of measurement. Similarly, good parenting discipline significantly decreased antisocial behaviors at Time 2, but the good parenting discipline at Time 1 did not make any significant difference in the boys' antisocial behaviors at Time 2. The study did not find any reciprocal effects between peer relations and antisocial behaviors; however, unidirectional effects of antisocial behaviors on poor relations with peers were revealed in both cross-lagged and cross-sectional analyses.

Patterson (1986) found significant bidirectionality between parents' inept discipline and child coercion in a study with fourth-grade boys. Another finding from this cross-sectional study was that inept discipline significantly predicted children's antisocial behavior; however, earlier antisocial behavior was not controlled. Patterson (1986) argued that as children learn more skillful coercive behaviors, it becomes more difficult for parents to discipline the child (Patterson, 1986).

It has been demonstrated that during the transition to adolescence, parents and children experience increasing conflicts and greater discrepancies in perceptions and expectations (Collins, 1990; Holmbeck & O'Donnell, 1991). More information needs to be collected comparing early adolescents and middle adolescents and their relationships with their parents at various points in time. Few studies examine the effects of earlier relationships on later behavioral development in terms of excluding dyadic effects in a comprehensive theoretical model. Indeed, even fewer studies document cross-lagged versus contemporaneous effects of parent-child reciprocity on children's behavioral development.

The purpose of the present study was to focus on developing and testing a comprehensive model which examined the cross-lagged and contemporaneous effects of the reciprocal relationship between a very specific parenting practice (i.e., harsh parenting) and children's aggressive behavior. In the hypothesized conceptual model, the antecedent parent-child reciprocity is projected onto the development of adolescents' later externalizing problem behaviors. Utilizing structural equation modeling with 3-year longitudinal data, the following three specific aspects were examined: (1) stability of each latent construct (2) the cross-lagged versus contemporaneous reciprocity between harsh parenting and aggressive behavior (3) the cross-lagged versus contemporaneous effects of harsh parenting and aggressive behavior on externalizing problem behavior among adolescents.

The Hypothesized Conceptual Model

Figure 1 presents the conceptual model which was examined in the present study. Justification for each of the latent constructs shown in the theoretical models and the relationships among the exogenous and endogenous variables is provided in the following chapter, the literature review. In the model, each of the three latent constructs, harsh parenting, aggressive behavior, and externalizing problem behavior was measured at three different points in time over a 3-year interval. Measuring each of the latent constructs repeatedly at three different times has several noteworthy meanings.

First of all, it allows the researcher to examine stability and change in the constructs developmentally. For example, if the path between Time 1 and Time 2 harsh parenting turns out to be significantly positive, it indicates stability of harsh parenting.

Secondly, controlling for the effect of earlier externalizing problem behavior provides a solid ground to develop predictions for the effects of harsh parenting and aggressive behavior on externalizing problem behavior since a predictable disturbance in the outcome

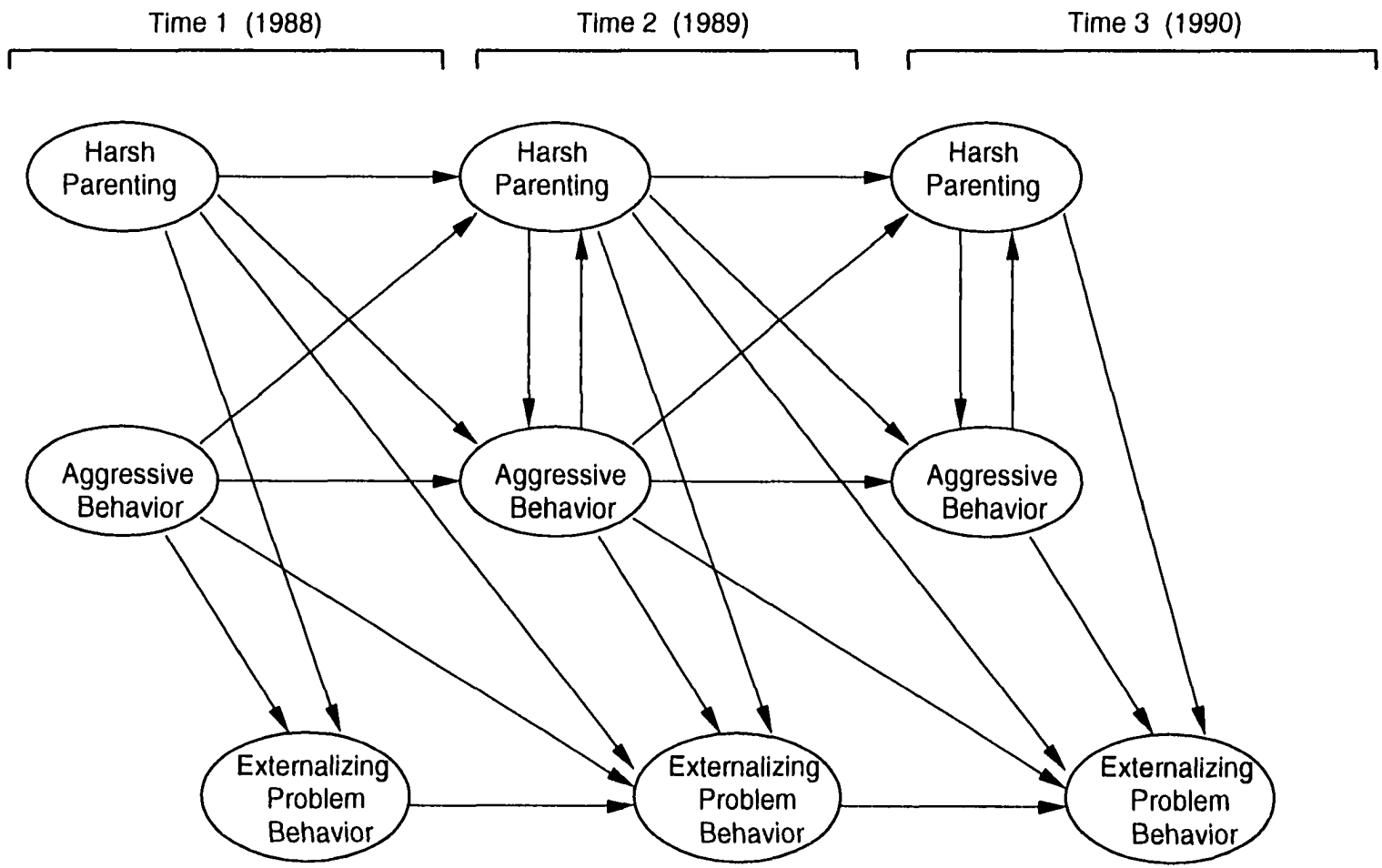


Figure 1. The Hypothesized Conceptual Model

variable has been isolated. The earlier level of the outcome variable (i.e., externalizing problem behavior) must be controlled so that the explanatory variables (i.e., harsh parenting and aggressive behavior) which predict the outcome variable are not placed in jeopardy.

In summary, the hypothesized conceptual model was designed to test for both cross-lagged and contemporaneous effects of the bidirectionality between harsh parenting and children's aggressive behavior. In addition, the conceptual model investigated the cross-lagged and contemporaneous effects of harsh parenting and aggressive behavior on externalizing problem behavior after controlling for the earlier effects of externalizing problem behavior. To implement the primary research purpose, which was developing a theoretical model that allowed the examination of the bidirectionality of parent-child relationships empirically in cross-lagged and contemporaneous ways, the hypothesized conceptual model was tested by a series of sequential model comparisons among hierarchically nested and/or competing models.

Research Questions

1. To what extent is each latent construct (i.e., harsh parenting, aggressive behavior, and externalizing problem behavior) stable when measured at three different points in time?
2. To what extent do parents' harsh parenting practices affect children's aggressive behaviors in both cross-lagged and contemporaneous ways?
3. To what extent do children's aggressive behaviors influence parents' harsh parenting in both cross-lagged and contemporaneous ways?
4. To what extent does the bidirectional relationship between harsh parenting and aggressive behavior predict the children's externalizing problem behavior after controlling for the effect of the earlier externalizing problem behaviors?

5. Does the conceptual model behave differently due to effects of children's sex, cohort (sixth graders versus eighth graders), and/or the interaction effect of the two?

CHAPTER 2

LITERATURE REVIEW

"How are maladaptive problem behaviors (e.g., withdrawal, aggression) in one's childhood associated with developmental consequences like delinquency or psychopathology later?" "How do children develop maladaptive behaviors?" "To what extent do genetics and/or the environment affect problem behaviors?" "To what extent do parents, siblings, peers, cultures, mass-media such as television influence the development of the behaviors?"

During the last several decades developmental researchers have been attempting to answer the above inquires as clearly as possible. It has been almost half a century since one of the first longitudinal studies of aggression was initiated by Lefkowitz and his colleagues in 1955. Despite an enormous development in research methods as well as in developmental theories, the answers we have today are hardly any more explicit as they were in 1950s. Although we do not have a clearly and fully developed theory explaining the whole process of maladaptive behavior development, researchers have identified several processes that escalate the development of antisocial behaviors and their consequences (e.g., Patterson, 1982).

The following review focuses on those processes contributing to the development of problematic behaviors within the family setting. Among diverse intrafamilial issues and aspects, consideration of the theoretical framework is specifically geared toward the notion of bidirectionality in the parent-child relationship. Next, the literature review emphasizes evidence of (1) parents as prominent developmental agents and how they affect the emergence of or enhance their offspring's aggressive behaviors, (2) children as developmental agents influencing their parents' discipline practice which, in turn, reinforces the children's aggressive behaviors, and (3) externalizing problem behaviors during

adolescence which are the developmental product derived from the effects of parenting and aggression, and the mutual influences of these two on each other. Additionally, methodological issues in existing research studies will be discussed.

Theoretical Framework

In research on parenting, it is well acknowledged that early childhood experiences are very critical for the entire life span; thus, for several decades in research, parents have been in the spotlight as the most powerful agent influencing children's development, more so than any other agent.

Researchers investigating parental influences on children's developmental outcomes often connect their research studies to a theoretical framework that explains child-rearing variations. Parenting style, perhaps, has been one of the most well-known and most widely used constructs in the inquiry of differences in child-rearing. Early researchers used meta-analyses and/or factor analyses to develop a global classification of parenting (Maccoby & Martin, 1983).

For example, Schaefer (1959) examined intercorrelations among variables in previous studies and classified two major dimensions: warmth-hostility and control-autonomy. Becker (1964) suggested a very similar classification of parenting dimensions: warmth (acceptance)-hostility (rejection) and permissiveness-restrictiveness. Contemporaneously, however, the most widely employed classification is Baumrind's typology of four dimensions of parenting style.

According to Baumrind, parents differ from one another along two orthogonal dimensions: responsiveness and demandingness (Baumrind, 1967, 1971, 1988, 1991, 1993). Responsiveness refers to "the extent to which parents intentionally foster individuality and self-assertion by being attuned, supportive, and acquiescent to children's

needs and demands" (1993, p. 1308), whereas demandingness refers to "the claims parents make on children to become integrated into the family by their maturity expectations, supervision, disciplinary efforts, and willingness to confront a disputive child" (1993, p.1308). When these two dimensions are crossed, four types of parenting style emerge: authoritative, authoritarian, permissive, and rejecting-neglecting. Authoritative parents are those who are both responsive and demanding. Authoritative parental behaviors refer to "the unique combination of high control and positive encouragement of the child's autonomous and independent striving associated with optimal competence" (Baumrind, 1988, p. 351).

In contrast, authoritarian parents are demanding but not as responsive as authoritative parents. Authoritarian parents are described as "attempting to shape, control, and evaluate the behaviors and attitudes of the child in accordance with a set standard of conduct-usually an absolute standard that is theologically based or formulated by a higher secular authority" (Baumrind, 1988, p.353). They value obedience as a virtue and favor punitive responses to conflicts occurring when their children's behaviors are not in accordance with their standard of acceptable conduct.

Permissive parents are responsive and warm but less controlling. They allow self-regulation of their children as much as possible but express few mature demands. They attempt to avoid the use of coercive power to control their children's impulses, desires, and behaviors. Rejecting-neglecting parents are neither demanding nor responsive; they are unengaged and nondirective. They are reported as highly coercive and lack in stimulating their children intellectually (Baumrind, 1988).

Boys of authoritarian parents were found to be more hostile and resistive than boys of authoritative parents; similarly, girls of authoritarian parents were relatively more dependent and less dominant than girls of authoritative parents (Baumrind, 1988). Children from permissive homes were not significantly distinguished from all other children; however,

they were less oriented toward achievement when compared with children of authoritative parents.

Children exposed to an authoritative parenting environment are more likely to be cooperative, self-reliant, self-controlled, explorative, and content than their counterparts from the other types of child-rearing. In addition, children from authoritative parents have higher self-esteem, more competent in peer relationships, and more independent than children from nonauthoritative parents (for a complete review, see Baumrind, 1988).

Parental influences accounted for by parenting styles do not appear to be declining as children mature (Baumrind, 1991, Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). Findings from this research conducted with adolescents are in accord with those with younger children. Authoritative parenting has been consistently reported as a better developmental environment promoting adolescent's prosocial and positive outcomes such as autonomy, moral development, and academic achievement (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Glasgow, Dornbusch, Troyer, Steinberg, & Ritter, 1997; Paulson, 1994; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992).

Using longitudinal data, Glasgow et al. (1997) attempted to account for the relationship between parenting style and adolescents' outcomes (i.e., academic performance and educational expectations) via the adolescent's attribution style. They found that high school students from heterogeneous backgrounds who experienced a nonauthoritative parenting environment tended to have an attributional style which attributed their poor grades to external causes or to their low ability. They concluded that authoritative parenting fostered most successfully "personal and social responsibility" among the adolescents.

Steinberg (1990) found that the two orthogonal dimensions of Baumrind's parenting typology promoted two different outcomes in adolescents' development: responsiveness appeared to be promoting the development of self-esteem and social skills, while demandingness seemed to be facilitating social responsibility. The finding was derived from his observation that adolescents from authoritarian parents were relatively obedient but did not show high self-esteem as compared with those from authoritative parents. Furthermore, adolescents from permissive parents were self-confident but demonstrated higher levels of substance use and school difficulties while adolescents from neglectful parenting background marked the lowest scores on self-competence and the highest scores on behavior problems. He concluded that unfavorable outcomes would take place when one or more components of authoritative parenting are not present.

Steinberg et al. (1989) also reported a positive and indirect effect of authoritative parenting on academic achievement among children in early and in middle adolescence through the adolescents' attitudes toward school and their beliefs in themselves. Authoritative parenting significantly facilitated their children's healthy sense of autonomy; in turn, the children showed more adaptive development than their peers from other parenting style environments. In addition, Steinberg and his colleagues (1992) found a positive relationship between authoritative parenting style and parents' involvement in adolescents' schooling. Not surprisingly, authoritative parents were more involved in their children's schooling; in turn, the schooling involvement encouraged the adolescents' academic achievement.

Nonauthoritative parenting tends to be associated with adolescents' problem behaviors. In early work, Coopersmith (1967) found that low self-esteem among fifth and sixth grade boys was associated with authoritarian parenting. Employing a representative sample containing approximately 10,000 high school students from diverse socioeconomic

and ethnic backgrounds, Steinberg and his colleagues (1992) investigated four developmental outcomes: school performance, self-reliance, psychological distress, and delinquency. The outcomes of adolescents reared in authoritative families sharply contrasted with those in nonauthoritative rearing environments: negative correlations between nonauthoritative parenting and school success and self-reliance and positive associations with distress and delinquency. Additionally, Steinberg and his colleagues (1992) reported that their findings were consistent independent of ethnicity, socioeconomic status, and family structure.

Although it has merit to synthesize diverse parental attributes into an integrated framework, parenting style typologies have been challenged mostly because of the following pressing issues. First of all, researchers have emphasized that a simplistic application of the typology should be avoided. The positive relationship between authoritative parental responsiveness and child's compliance, competence, and cooperation (Bornstein, 1989; Kochanska & Aksan, 1995; Londerville & Main, 1981; Lay, Waters, & Park, 1989; Minton, Kagan, & Levine, 1971) and the negative relationship between authoritarian style and child's compliance (Bornstein, 1989; Bourn, 1993; Crockenberg & Litman, 1990; Rothbaum & Crockenberg, 1995) should be understood with the following factors taken into consideration: (1) interindividual differences in parents, in children, and in the pair, and (2) socio-cultural factors such as socioeconomic status and cultures.

For instance, from the moment when the typology was introduced in the field up to today, cross-cultural research with regard to parenting style has constantly questioned whether or not parenting style typologies have cultural significance (Nucci, 1994). In fact, Baumrind (1972) herself was among the first researchers who reported that an authoritative parenting syndrome did not appear among African-Americans. Bartz and Levine (1978) also found that African-American parents' relatively authoritarian parenting, compared to

white parents, originated in their expectation that their children should be independent as soon as possible; the result was revealed after the education level of the parents was controlled. Recently, the effort of cross-cultural researchers has reached a point where a new typology has been created. Controlling parenting as proposed by Chao (1994) captures a characteristic of Asian families (e.g., Chinese) in which children's perception of parental warmth increases along with an increase in parental authority.

Most importantly, it has been suggested that parenting style should not be used interchangeably with parenting practices (Darling & Steinberg, 1993; Holmbeck, Paikoff, Brooks-Gunn, 1995; Maccoby & Martin, 1983). In Maccoby and Martin's (1983) substantial review of the socialization of children, children's outcomes associated with parenting style, and children's outcomes related to a specific parenting practice (e.g., induction and attribution) implied that the two concepts might not be equivalent to each other. This issue is more precisely elaborated in the following quote by Holmbeck et al. (1995),

> A conceptualization of the parenting task that relies solely on parenting styles, and especially parenting typologies, may miss the richness of parent-child interactions, may be overly descriptive (rather than predictive), and may restrict the search for mechanisms by which parents influence their children. Parenting style is not merely an additive combination of two clusters of parenting behaviors (i.e., responsiveness and demandingness). (p. 100)

Furthermore, Darling and Steinberg (1993) raised three critical questions about the construct of parenting style: (1) how to explain the variability in the effects of parenting style as a function of the child's cultural background, (2) how to operationalize parenting style, and (3) how to conceptualize the process of parenting style influencing children. They

argued that the process of parenting style influencing children's outcomes could not be well captured without considering three aspects simultaneously: specific goals of socialization, specific parenting practices performed to reach the goals, and the parenting style/emotional climate when socialization takes place (Darling & Steinberg, 1993).

Attempting to answer the three inquires, they proposed an integrative model of parenting style as a context. In their model, they redefined parenting style as "a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent's behaviors are expressed" (Darling & Steinberg, 1993, p.488). The key word is "emotional climate." According to Darling and Steinberg, parenting style is not a "direct effect" on adolescents' development, rather, it is an "indirect effect." Parenting style is then an environmental variable that is connected with other aspects of parenting such as "non-goal-directed" parenting behaviors (e.g., gestures, changes in voice tone, non-verbal body expression of emotion) in addition to demandingness and responsiveness. In their study, parenting practice was hypothesized as having a direct effect on adolescent's development, which can be best understood for "fairly circumscribed socialization domains, such as academic achievement, independence, or cooperation with peers" (Darling and Steinberg, 1993, p.493).

Additionally, Holmbeck et al. (1995) argued that,

> Parenting style is an "inclusive" construct. For example, two authoritative parents may exhibit similar levels of demandingness and responsiveness, but may display these qualities in very different ways. Demandingness and responsiveness are not necessarily manifested in the same way across different types of parenting styles. For example, the "demandingness" displayed by an authoritative parent probably differs from the "demandingness" displayed by an authoritarian parent, with the latter

> permitting less verbal give-and-take between parent and child. Thus, more specific parenting behavior must be taken into account in order to explain differences in adolescent outcome. (p. 100)

Lewis' (1981) critique and reinterpretation of Baumrind's typology drawing a contrast with attribution theory support the argument by Holmbeck and his colleagues. Lewis raised a question of why do some strong external controls occasionally used by authoritative parents still foster children's internalization of parents' values and rules. According to attribution theory, strong external controls weaken children's internalization. The attribution theorists argue that when parents use power-assertive techniques more than is needed, their power assertion becomes salient and consequently their children are reluctant to internalize the parents' values and are likely to attribute their behaviors to the external pressure, their power-assertive parents (Dix, 1993).

Lewis argued that internalization in an authoritative parenting environment happens not because of controlling children but because of mutual, reciprocal, bidirectional communication with parents who are open to exchanging arguments. This particular critique makes it explicit that Baumrind's parenting style typology does not address the mutual, reciprocal, bidirectional relationships between parents and children. In other words, her parenting style typology has an unidirectional view of the parent-child relationship. Moreover, Lewis' reinterpretation of Baumrind's parenting style typology implies that power-assertive/coercive parenting techniques differ from parenting that is firm and strict. It is assumed that authoritarian parents are firm, strict, and consistent, but are not necessarily power-assertive and coercive. In other words, power-assertive parenting practice is more dysfunctional, more extreme, more damaging to children, and less consistent (Maccoby & Martin, 1983).

From a social-interactional perspective, coercion theory provides a better understanding of the bidirectionality as well as of the roles, effects, and consequences of power-assertive parenting discipline with regard to the development of problem behaviors among children and adolescents. Coercion theory primarily considers "the probabilistic relations between the antecedent behavior of one family member and the reaction of some other members of the family" (Patterson, 1982, p.84). According to Patterson (1982), there exist certain family members' behaviors which are more likely to receive "aggressive reaction from antisocial children" (p. 85). He applied "the reinforcement mechanism" from social learning theory to assess the probabilistic relations between children's aggressive reactions and other family members' behaviors.

By contrasting negative reinforcement with positive reinforcement for aggressive behaviors, it was found that negative reinforcement which was generally associated with parental punishment intensified the children's aggressive behaviors. In turn, the intensified aggressive behaviors produced parental irritability and the irritated parents used more rigid punishment. Escalation, one of the key assumptions in coercion theory, occurs when "each increment in intensity has been reinforced by the submissive reaction of the victim to the prior increase in amplitude" (Patterson, 1982, p. 155). Thus, in a majority of families with antisocial offspring, coercive family processes occur when family interaction promotes the members' escalating aversive behaviors.

In addition, coercion theory explicitly demonstrates how antisocial children, those who often react annoyingly to power-assertive parenting practices which are associated with punishment, learn aggressive behaviors. From a social learning perspective, according to Patterson (1982), over a period of time, "the to-be-aggressive child must learn which set of coercive responses will be successful with which family member" (p. 93). For example, in his earlier work, observation data showed both normal and deviant boys learn that they may

not hit their mothers, but they can hit siblings (Patterson, 1980). He found that the boys learned that a series of aggressive behaviors such as yelling was very appropriate when the targets were mothers. Thus, the boys were using aggressive behaviors toward their siblings such as teasing, humiliating, or hitting.

When the mothers of the boys reacted coercively (i.e., punishing), the boys learned "the setting" in which aggressive behaviors were going to be successful. The important point is that mothers' coercive reactions to aggressive behaviors and children's aggressive behaviors toward the coercive reactions, which will bring an intensified later coercive reaction, occur "contingently." Once children contingently learn the context when and where their aggressive reactions or behaviors are effective, the aggressors who force other family members to withdraw their aversive behavior are encouraged by successfully ending the aversive behavior of the other (Pettit, 1997).

It should be pointed out that although coercion theory is heavily influenced by social learning theory, the escalation concept distinguishes coercion theory from classic social learning theory. The concept of escalation was developed for a purpose of explaining the initial establishment of aggressive behaviors (Cairns, Santoyo, & Holly, 1994). The weakness of social learning theory is its failure to explain the acquisition of new behaviors that were not presented earlier. The elicitation of aggression is not necessarily from observation of attacks.

However, learning plays such a powerful role in the reoccurrence of aggressive behaviors, the latency by which they occur as well as the contexts in which they occur. As the coercive cycle continues, the intensity of child and other family members' coercive behaviors are gradually escalated, frequently leading to "high-amplitude behaviors" such as physical attacks. In highly coercive families, interchanging coercive behaviors may be

functional to keep the family members surviving in a highly aversive social environment (Patterson, DeBaryshe, & Ramsey, 1989).

Bell's (1977) control systems theory interprets children's contribution to the reciprocity of parent-child interactive relationship in a distinctively different way than coercion theory. The former suggests that children's aversive behaviors are due to the children's existing antisocial traits and that parents' aversive reactions/behaviors are generated by the children's aversive behaviors. The latter considers children's antisocial behaviors as products of environmental effects; in other words, parents' coercive disciplines stimulate children to react aversively.

In control systems theory, parents and children are considered to have a certain level of tolerance toward each other's behaviors; at the same time, they are presumably sensitive to the behavior of the other. With these assumptions, two scenarios could possibly occur. On the one hand, when a child's behavior reaches the upper level of parent's tolerance (e.g., aggressive behavior), the parent will react toward the child with "upper limit control" behavior such as restriction. On the other hand, when a child's behavior meets a parent's lower level of tolerance (e.g., socially withdrawal), the parent will display a behavior that activates "lower limit control" such as help. Parallel to parents, children also react based upon the tolerance level that they possess. When their expectations of parents reach upper or lower limit, children show reactions corresponding to the limit. The reciprocity of parent-child relationship in control systems theory is described as the constant adaptation and reaction to the other's behaviors depending on tolerance levels.

However, the reciprocal interactions between the two parties do not occur when they mutually meet their expectations which is described as a system in equilibrium (Bell & Chapman, 1986). It was also argued that most of the significant socialization occurs when the system undergoes destabilization (e.g., a child's breaking parents' rules). At times of

destabilization, the roles of children's antisocial traits are apparent. Hence, this framework argues that parental influences are actions or behaviors that are fundamentally elicited by children's biological tendencies (e.g., temperament) which often leads the system to destabilize. Bell and Chapman's (1986) review of empirical research studies in the areas of children's independence-dependence, hyperactivity-activity, and person orientation supported the argument.

A meta-analysis study by Lytton (1990) concluded with emphasizing the genetic aspects of children's contribution to parenting. Lytton (1990) discussed the three ways of interpreting the positive relationship between aversive parenting disciplines and children's conduct disorders: one that parents aggravate children's tendencies, the other that parents' reactions are primarily evoked by children's behavior, and the third that both parents and children are predisposed to aversive behaviors because of genetic factors. The first interpretation tendency is shown in Patterson's coercive theory; the third view is an example of genes' evoking environment effects (Scarr & McCartney, 1983) and is reflected in Bell's control systems theory that children's antisocial traits exceeding parents' upper limit tolerance result in creating an environmental effect, parents' aversive reactions.

However, the simplistic question of genetic versus environmental effects in antisocial behaviors was provocatively criticized by Dodge (1990). In his response to Lytton (1990), Dodge pointed out that child effects, environmental effects, and conduct disorders are not "homogeneous constructs" (p. 698); in fact, these are heterogeneous constructs that should be understood while taking into consideration the interaction between nature and nurture. He argued that researchers should go beyond the bipolar inquiry into genetics and environments and should focus on mechanisms which explain the interaction effects occurring during transitional development periods in families. He also criticized that the magnitude of children's effects was overestimated in Lytton's review of literature since the

prediction of earlier conduct disorders on later delinquent behaviors is not because of "the primacy of child effects" (Lytton, 1990, p. 690) but because of "the continuity of behavior over time" (Dodge, 1990, p. 700).

In summary, there remains no controversy among researchers regarding the reciprocity of the parent-child relationship either driven from genetics, elicited from environments, or generated from the interaction of the two. However, it is obvious that the perspective of the interaction of the two has been less theorized as compared to the nature or nurture point of view. The reason may be because we know little about mechanisms of reciprocal transactions. Even worse, there has been limited understanding of who took the initiative in aversive encounters between parents and children. So far, researchers have not made any conclusions on "the drivers" of the interactions, which implies children may be the ones who create aversive situations but parents actually could be the drivers (Wahler, 1990). Hence, more endeavors of researchers are in need to identify the mechanisms.

In addition, previous studies acknowledge that the global concept of parenting style should be broken into very specific parenting practices (e.g., power-assertive or harsh disciplines) as one of the first steps to clarify the unknown mechanisms. This specification of parenting practices should precede drawing a direct causality of parental influences to children's development and predicting the development of children's antisocial behaviors from parents' effects (e.g., Darling & Steinberg, 1993). Furthermore, children's effects need to be appropriately estimated particularly in research on children's general antisocial behaviors (Dodge, 1990). Knowing from a life-span perspective that earlier manifestations of maladjustment problems lead to the onset of later behavioral problems (Hertzog & Nesselroade, 1987; Lerner et al., 1988), the interpretations of both parents' and children's influences on each other and on the development of later problem behaviors should be addressed after controlling for the stability of the children's earlier behavior problems.

The Impact of Harsh Parenting on Children's Development

Power-assertive or harsh parenting behaviors have been linked with children's antisocial behaviors such as aggressive behaviors in childhood and externalizing problem behaviors during adolescence. The robust association of parents' inept disciplines with children's and adolescents' various behavioral problems have been well recognized, particularly in coercion theory. According to Patterson (1982, 1986), children's and adolescents' antisocial behaviors emerge primarily from dysfunctional interactions with their parents who are highly likely to use power-assertive tactics.

Applying coercion theory, McFadyen-Ketchum, Bates, Dodge, and Pettit (1996) observed coercive and affectionate interactions between mothers and aggressive children at four different times: from kindergarten to third grade. They hypothesized that there would be four groups of children due to changes in the level of aggressive behavior from the first year of contact (during kindergarten year) to the last year of observation (at the third grade): those who initially showed high aggressive behaviors and maintained the same high level; those who were highly aggressive but for whom the level decreased over time; those who displayed a low level of aggressive behavior but showed more aggressive behavior later on, and lastly, those who were less aggressive during kindergarten but were more aggressive during the third grade. They added the effect of the child's sex to the four groups of children; consequently, 8 types of changes in aggressive of behavior were developed.

McFadyen-Ketchum et al. (1996) reported a cross-sectional finding that both boys and girls who experienced coercive interactions with their mothers at home were more likely to be aggressive in kindergarten and grade school years. However, the longitudinal effect of earlier maternal coercion on aggressiveness in grade school years was found only for boys. Boys who experienced earlier high coercion (i.e., negative maternal responses such as scolding, yelling, and physical punishment) at home were more likely to behave aggressively

toward peers and teachers later on than their counterparts who were exposed to high level of maternal affectionate environment.

Examining aggressive behaviors of boys aged 13 through 16, Olweus (1980) identified four variables contributing to aggressive behavior: mother's negativism, both father's and mother's parental power-assertive disciplines, mother's permissiveness for aggression, and boy's temperament. Employing path-analysis, Olweus found that boys who were temperamental, experienced rejection or hostility from their mothers, received strong aggressive reactions from both fathers and mothers (e.g., physical punishment, threat), and had mothers who were permissive of aggressive behaviors, were viewed as aggressive and hostile by their peers.

By comparing mothers of aggressive boys and mothers of nonaggressive boys, Dix and Lochman (1990) found that the mothers of aggressive boys tended to report stronger negative affect and made more negative attributions than did mothers of nonaggressive boys. Once the negative attribution with the negative affect toward the children was established, the mothers stabilized coercive parent-child interaction patterns. Further, Dix, Ruble, & Zambarano (1989) reported that attributions of children's competence and responsibility for misconduct were mediated by parenting attitudes and children's age. Ultimately, the attributions, the parenting attitudes, and children's age significantly predicted children's behaviors which later on impacted mothers' discipline preferences.

It is worthy to mention that one parenting variable which has been frequently reported as being considered with children's aggression is parental rejection (Rubin et al., 1995). Rejecting parents frequently and inappropriately apply power-assertive techniques and punishment. In general, it has been found that parents who are cold and rejecting, physically punitive, and who discipline their children in inconsistent manners have aggressive boys (Conger et al., 1992; Olweus, 1980).

In terms of long-term effects of negative parenting, parents' harsh and power-assertive discipline occupies a central position in the development of further problem behaviors during early- and middle adolescence. For example, in the study by Straus and Connelly (1993), "corporal punishment" defined as "the use of physical force with the intention of causing a child to experience pain but not injury, for purposes of correction or control of the child's behavior," (p. 422) hindered adolescents from developing independence and identity.

An additional interesting finding from the Straus and Connelly's study was the role of gender in corporal punishment by parents of their children in adolescence. In the study, fathers tended to use corporal punishment more often with adolescent sons than with daughters. They concluded that the main reason why adolescent daughters were hit less overall than adolescent sons was because fathers hit daughters less as the daughters grew older. However, they added that the differences according to gender of the parent and child were relatively small (Straus & Connelly, 1993).

A study done by Melby, Conger, Conger, and Lorenz (1993) revealed that adolescents' tobacco use was positively predicted by harsh and inconsistent parenting; warm and nurturant parenting predicted a negative relationship with tobacco use. Indeed, Paulson (1994) argued that there was a positive relationship between adolescent's perception of parental rejection and development of delinquency.

Weiss and Schwarz (1996) also reported a positive association of parental assertive control with college students' substance use and poor academic achievement. However, the significant result of these adolescents' drug or alcohol use was found only among seniors in college. They cautiously speculated the reason why only seniors, not freshmen, showed the association of substance use with the assertive control parenting style was because during one's freshmen year, there may be other influential factors such as

increased freedom and availability of drugs or alcohol in addition to assertive parenting styles (Weiss & Schwarz, 1996).

The effects of ineffective parenting disciplinary tactics on children's later problem behavior have been more evident through longitudinal studies. One study revealed that conflict between parents and inadequate discipline increased the probability of delinquency, early sexual activity, and drug use (McCord, 1990). In addition, Harold and Conger (1997) showed that the development of adolescent's internalizing problem (i.e., depression, anxiety, hostility) as well as externalizing problem (i.e., antisocial behavior, delinquency) were predicted by the adolescent's earlier perceptions of parental hostility. Employing a three-year longitudinal data set, the earlier perceptions of parental hostility which was due to both parents' hostility toward adolescents and to adolescents' awareness of their parents' marital conflict, predicted significantly internalizing behavioral problems for both boys and girls; however, externalizing problems were found only among boys (Harold & Conger, 1997).

Wasserman et al. (1996) also confirmed positive impacts of inept parenting on the development of 6-10 year old boys' externalizing problem behaviors. In a 2-year longitudinal study, they examined three aspects of parenting: parental involvement, parent-child conflict, and monitoring. When parents showed less emotional support, were less willing to communicate, and used more physical punishment, their male children were more likely to show externalizing problem behaviors such as delinquency; however, there was no effect of parental monitoring on the externalizing problem behaviors.

In a 7-year longitudinal study (from kindergarten to 6th grade), Pettit, Bates, and Dodge (1997) contrasted the effects of supportive parenting with harsh parenting on children's adjustment (i.e., behavior problems, social skills, and academic performance). They investigated whether children's poor adjustment was the developmental outcome of

both deficiency in supportive parenting and presence of harsh parenting or the presence of harsh parenting only.

The findings showed that supportive parenting predicted better adjustment in the sixth grade after controlling for earlier adjustment level as well as harsh parenting. Moreover, supportive parenting attenuated the effects of earlier family adversity on later behavior problems (Pettit et al., 1997). The findings from the study demonstrated not only negative impacts of harsh parenting on children's social skills and academic performance and positive impact on externalizing problems, but also the superiority of supportive parenting in terms of predicting better developmental outcomes of children.

In short, it is indisputable that harsh parenting which is often accompanied by physical punishment negatively affects children's healthy development. Moreover, the types of behavioral problems due to harsh parenting are not localized to one or two behaviors such as aggressive behavior during early childhood but diversified to externalizing problem behaviors such as delinquency during adolescence. However, there has been an argument that parents are not solely responsible for parenting children harshly; it, in fact, is the children who make parents behave harshly towards them. The bidirectional view on harsh parenting and children is reviewed next.

The Effect of Children's Aggressive Behavior on Parents

The unidirectional view of parental influences toward children's development has been heavily criticized for its ignorance of children's effects on parents. Since the pioneering work by Bell (1968), the focus of developmental literature has been extended to the neglected issue of children's effects in the social context of parent-child relationships (Ambert, 1992; Belsky, 1984; Bornstein, 1989; Kochanska & Aksan, 1995; Martin, 1981; Steinberg, 1988). As a matter of fact, some of the reciprocal interaction between parents

and children can be traced to the work of Baldwin (1906). He emphasized the child's embeddeness in an interactional network and argued that the child's personality in general underwent continuous modification as a result of the feedback from significant others.

From a developmental perspective, Maccoby and Martin (1983) thoroughly reviewed the socialization of children in the context of the reciprocity. At birth, the parent-infant bond is seemingly established and initiated by a primary care-giver, often the mother. However, along with the sensory-motor development, the infant's ability to influence adult behaviors is enlarged in a more interactive sense (Maccoby & Martin, 1983). Once interaction has emerged, the two parties are connected more closely. As the infant enters toddlerhood and childhood, the reciprocal interaction is getting more salient. The scheme of reciprocal interaction has been frequently illuminated in the concurrent encounters between "the difficult children" and their parents' discipline behaviors.

Difficult children, those who are perceived as aggressive or socially withdrawn, have received abundant attention from developmental psychologists for more than a century. Aggression is "a behavioral reflection of psychological undercontrol," whereas social withdrawal refers to "psychological overcontrol and its behavioral manifestation" (Rubin et al., 1995).

The enormous interests of researchers in these two phenomena are derived from the fact that childhood aggression vigorously predicts externalizing behavioral problems such as school-drop out, delinquency, and criminality in adolescence (Farrington, 1991; Huesmann, Eron, Lefkowitz, & Walder, 1984; Kupersmidt & Coie, 1990) and childhood social withdrawal forecasts development of adolescents' internalizing behavior problems such as psychopathology or depression (Rubin, 1993).

In particular, the stability of aggressive behavior has been well recognized in several research studies (e.g., Lerner et al., 1988; Olweus, 1979) although the degree of stability

appears to vary with the sex of children; males' aggressive behaviors are more stable than females' (Parke & Slaby, 1983). Olweus (1979) reviewed 24 previous studies of only males' aggressive behaviors; the studies reported aggressive behaviors by both ratings as well as direct observations. The range of subjects' ages in the studies were from 2 to 18 at the first data collections and the follow-up studies were done from 6 months to 21 years later with a mean follow-up interval of 5.7 years. Olweus (1979) found overall high stability and that the stability coefficients attenuated with the increase in the time interval.

Several longitudinal studies support considerable stability of aggressive behavior. For example, from a 31-year ongoing longitudinal study, Lerner et al. (1988) found that aggression of both boys and girls at ages ranged from 1-6 years was highly maintained across the following six years. In addition, McFadyen-Ketchum et al. (1996) reported high stability of aggressive behaviors among boys and girls when their aggressive behaviors were measured four times between kindergarten and third grade. Moreover, they suggested that if changes in aggressive behavior were found, the changes were due to measurement errors rather than due to actual changes in aggressive behavior. Given the evidence of high stability, the question that remains unanswered is how does children's aggressive behavior affect other family members, especially their parents in terms of discipline and socialization?

Focusing on children's contribution to parenting, Bell and Chapman (1986) crystallized a child effect. They argued that aggression in children is a genetically driven predisposition and that aggression elicits negative parenting behaviors. This specific argument shows a linkage with Olweus (1979). Since Olweus suggested that interindividual differences in aggressive behavior are profoundly influenced by genetics, the importance of biologically determined influence on aggressive behavior may be worthy of attention.

However, there has been a criticism that the child effect, negative parenting behaviors due to child's aggressive behaviors, has been overstated (Dodge, 1990).

Nevertheless, it is indisputable that children's aggressive behaviors make parents' disciplining of these aggressive children very difficult; potentially, parents' reactions or behaviors become negative.

Grusec and Kuczynski (1980) found that mothers of elementary school children used different disciplinary tactics as a function of children's different types of aggressive behaviors. In the study, when children displayed physically aggressive behaviors, mothers used one or more power-assertive tactics such as threatening, forcing compliance, or punishing physically; the severity of the power-assertive disciplines was increased along with the amplification of children's misbehaviors (e.g., property damage). However, when children harm other children psychologically (e.g., teasing), mothers used reasoning techniques rather than power-assertive tactics.

Maccoby and Martin (1983) illustrated the mutual interaction between punishment and children's aggression more explicitly. Once children initiated the disciplinary encounter of violating rules, their parents reacted to the encounter with a disciplinary behavior like punishment. The more aggressive children were, the more frequently the parents used punishment; in turn, the children would be less responsive to the punishment. The children's unresponsiveness would promote their parents' coercive behaviors. The repetition of the strained interaction cycle would result in numerous conflicts in the parent-child dyad. The opposite instance is a positive association of induction with children's prosocial behavior. When induction which refers to the use of explanations or reasons by parents was used, mothers' responsiveness to the child was enhanced by the children's cooperative behaviors (Parpal and Maccoby, 1985).

The notion of coercive cycle, partially introduced in Maccoby and Martin's (1983) work, is discussed in depth by coercion theory. Originating from social learning theory, coercion theory argues that the family is a system of socially interacting members who

develop patterns of behavior throughout the process of learning how to respond to each other (Patterson, 1982). When a child behaves aggressively, parents' reaction to the behavior is likely to be aversive. Receiving the aversive reaction, the child shows more aggressive behavior; then, parents' discipline techniques become more aversive than before. Throughout the continuous and escalating adversive interactions, children contingently learn how and when their aggressive behaviors toward parents' or other family members' coercive and power-assertive reactions are effective in terms of terminating aversive intrusions by the other family members (Patterson, 1986). Patterson and his colleagues have reported several empirical studies supporting coercion theory.

Vuchinich et al. (1992) found that preadolescent boys' antisocial behavior had a contemporaneously reciprocal relationship with the quality of parental discipline. When parents displayed good parenting tactics such as providing rationales for rules, children's antisocial behavior declined. Conversely, children's antisocial behaviors affected the decrease in the good parenting techniques as well as harming peer relationships. However, any cross-lagged effects of the reciprocity between the quality of parenting and children's antisocial behavior was not revealed. Vuchinich et al. (1992) interpreted the results to mean that children's (aged 9-10) antisocial behavior hindered parents from performing good discipline tactics. With regard to the significant concurrent effects and the nonsignificant cross-lagged effects, they argued that parents' or children's behaviors which recently occurred were more influential in the other partner's reactions or behaviors in interactive relationships than behaviors taken place long ago.

In sum, aggressive behavior, especially for boys, is considerably stable over time and negatively influences parents so that parents' reactions to children's aggressive behaviors are highly likely to be power-assertive. In addition to the well documented effects of aggressive behavior on negative parenting. researchers have focused on the continuity

with later externalizing problem behavior. Several studies have revealed a robust association of earlier aggressive behaviors with later externalizing behavioral problems; these studies are reviewed in the following section.

Harsh Parenting, Aggressive Behavior, and Externalizing Behavior Problems

There has been a controversy over whether or not externalizing behavior problem is continuous with aggressive behavior over time. Lytton (1990) reviewed previous studies demonstrating a positive relationship between earlier troublesome behaviors and later externalizing problem behavior. He concluded that the significant prediction of delinquent behaviors by earlier troublesomeness resulted from the primacy of child effects. However, Dodge (1990) did not accept Lytton's interpretation of a child's effect at all; rather, he suggested that the finding showed merely a continuity of behavior over time.

Beyond the controversy, it is clear that aggressive behavior is strongly related to several types of problem behaviors later in the life-span. Similar to aggressive behavior, high stability of externalizing problem behavior has been found in several research studies. Heller, Baker, Henker, and Hinshaw (1996) found that externalizing problem behaviors during the first grade were significantly predicted by those problems during preschool years.

Earlier aggressive behavior appears to impact several domains of behavioral problems. For example, Crick (1996) investigated the longitudinal relationship among overt aggression, relational aggression, and social adjustment among 9-12 year old boys and girls. She distinguished overt aggressive behaviors which tend to be harming others physically from relational aggressive behaviors which are apt to be intentionally manipulative or damaging to peer relationships. Based on peer- and teacher-assessed aggressive behaviors, she revealed that both overt and relational aggressive behaviors for boys, and

only relational aggressive behaviors of girls, were a significant risk factor leading to peer rejection.

Poor peer relation as a result of antisocial behavior such as aggressive behavior has been documented in several studies. For instance, Dishion (1990) found that preadolescent boys who showed a series of antisocial behaviors such as arguing a lot and being disobedient at home were significantly rejected by peers in their school; further, the boys with antisocial behavior problems had low levels of academic achievement.

Adolescents' externalizing behavioral problem (e.g., delinquency) which is related to earlier aggressive behavior has been recognized as a very challenging problem for parents, educators, and society. In a 6-year longitudinal study by Haapasalo and Tremblay (1994), physically aggressive boys (aged 6 at the first year of contact) from low socioeconomic family environment showed delinquent behaviors when they were 10 to 14 years of age. The examples of the delinquent behaviors were vandalism, destroying school material, stealing, and group fighting. In terms of the quality of parenting, the investigation of the familial environment to which the very physically aggressive boys were exposed revealed that poor parenting which was measured by physical punishment was positively associated with the family adversity. The poor parenting was the most salient factor in aggressive boys becoming delinquents. More importantly, the family adversity such as disputive communication between parents and their children predicted the development of delinquent behaviors particularly among boys who were high fighters with late onset (Haapasalo & Tremblay, 1994).

The familial context as a socialization setting has been further illustrated by Dodge, Pettit, and Bates (1994). They examined peer-rated aggressive behaviors among 585 children from low socioeconomic class with regard to later development of externalizing problem behaviors assessed by teachers' reports. The 4-year longitudinal study (from

preschool to grade 3) found that socioeconomic status significantly negatively impacted children's aggressive behaviors as well as externalizing problem behaviors in school. Simultaneously, socioeconomic status was significantly associated with the following eight factors: maternal harsh discipline, lack of maternal warmth, experience of adults' aggressive behaviors, mother's values toward aggressive behaviors, family life stressors, mother's lack of social support, instability of peer group, and lack of cognitive stimulation. These eight factors also significantly predicted children's aggressive behaviors and externalizing problem behaviors.

The authors concluded that children's aggressive behavior and its later developmental manifestation, externalizing behavior, were not only directly predicted by socioeconomic status but also significantly mediated by socialization experiences related to the eight identified factors. The study highlighted that harsh parenting tactics as well as an aggressive environment promote children's aggressive behaviors; in turn, aggressive behaviors are extended to externalizing behaviors when children get older.

Miller, Cowan, Cowan, Hetherington, and Clingempeel (1993) demonstrated that parenting warmth would decrease children's externalizing problem behaviors. The result was true for both cohort groups: one with children age 3 and half years and the other with children aged from 9 to 13 years. The quality of parenting in the study was investigated in association with marital quality and parents' depression. When a parent received support from his/her spouse and was not depressive, the parent was highly likely to interact with his/her child warmly and responsively. The high quality in parenting in terms of warm and responsive interactions with children resulted in decreasing children's aggressive behavior and in restraining externalizing behavioral problems.

Pulkkinen (1996) extended the prediction of earlier aggressive behavior to aggressive behaviors in both male and female young adults. She used an ongoing

longitudinal data set and assessed the sample at ages of 8, 14, and 27 years. The unique approach to aggression in the study was that aggressive individuals were divided into three groups. The first group was individuals who used aggressive behaviors to protect themselves; the second was a group of aggressive individuals who attacked others without a legitimate reason such as self-defense used by the individuals in the first group; the last group was those who were low in the two types of aggression.

The findings from the study showed that the reactively aggressive individuals (i.e., the first group) displayed better adjustment behaviors such as self-control and constructiveness than the other two groups of individuals at all three points of testing. However, the proactively aggressive males (i.e., the second group) had more externalizing problem behaviors and criminality in adulthood, whereas the proactively aggressive females had more internalizing problems and neuroticism at age 27. However, there were no gender effects for those who were proactively aggressive in terms of exhibiting conduct problems during adolescence and being prone to alcohol problems during adulthood.

It is apparent that externalizing problem behavior, which is often referred to as delinquency during adolescence, is rooted in earlier aggressive behavior. Further, parents' inadequate parenting practices such as harsh discipline and lack of warmth are undoubtedly associated with externalizing problem behavior. Noticing the fact that the relation of aggressive behavior with externalizing problem behavior is extended beyond adolescence into adulthood, the risk of rearing children in less functional familial environments should be considered more seriously.

Methodological Issues

There still remain unanswered questions about how to conceptualize parenting practices as distinctive from the dimensions of parenting style. It dramatically varies from

one study to another in how researchers develop and define the specific parenting practices known such as power-assertive and coercive control (Cohen & Brook, 1987; Hetherington & Martin, 1986), firm and consistent control (Maccoby & Martin, 1983), monitoring (Fuligni & Eccles, 1993; Patterson, Bank, & Stoolmiller, 1990), and constraining (Hauser, Powers, & Noam, 1991). In the literature, there does not appear to be an organized scheme to integrate this diverse terminology of parenting practices. Even worse, it is not clear how to distinguish one parenting practice from another in terms of boundary issues allowing us to clarify each parenting practice's territory.

Secondly, in the literature regarding parent-child interactions, maternal influences have been addressed sufficiently to acknowledge their crucial and basic roles in children's socialization (e.g., Kochanska & Aksan, 1995; Kochanska, Clark, & Goldman, 1997; Lay et al., 1989; Minton et al., 1971; Parpal & Maccoby, 1985; Rothbaum & Crockenberg, 1995, Schaefer, 1959). However, fathers' roles are apt to be omitted in research. Even though most would agree that mothers usually spend more time with children than do fathers, the socialization process in terms of developing pro- or antisocial behaviors among children should not be considered without both parents' ideas, beliefs, attitudes, and behaviors (McGillicuddy-De Lisi & Sigel, 1995). Fathers' and mothers' different ways of interaction particularly with adolescents are documented in a number of studies (e.g., Holmbeck et al., 1995). Although Collins and Russell (1991) reported that gender differences in parent-child dyads were not as pervasive as one would expect, the inclusion of fathers in research in the parent-child interactions is definitely worthy.

In addition to inclusion of fathers, girls should be included in an examination of the parent-child interaction. A majority of research studies which examined the relationship of parents with their antisocial or aggressive children tended to focus only on boys. It has been evident from findings of many studies that boys are undoubtedly more aggressive than

girls, at least overtly. However, studies showed that although girls are not overtly as aggressive as boys (e.g., physical aggressiveness), they were relationally as aggressive as boys (e.g., trying to make other children not like a certain person by spreading rumors or talking behind their back) (Crick, 1996; Grotpeter & Crick, 1996).

This evidence may not be directly related to children's aggressive behavior toward their parents. However, it shows that girls may be aggressive in different ways than boys are. Thus, the absence or lack of overt aggression among girls should not be treated as the total absence of all forms of aggression in girls. Therefore, examining both genders in the interactive relationship with both parents should be considered in order to understand different types of aggressive behaviors and different interactive styles due to the child's sex.

Lastly, although several empirical research studies showed the reciprocity between parenting and children's antisocial behavior (e.g., Vuchinich et al., 1992), limited efforts have been made to test the reciprocity of the parent-child interactions in a comprehensive theoretical model considering the earlier effects of reciprocity on children's later development. Further, most research studies have not tested the contemporaneous effect versus the cross-lagged effect of the reciprocal relationship as well as the tracing of the antecedent effect of the interaction on later developmental outcomes (Shaw & Bell, 1993). Particularly in this matter, advances in statistical methods (e.g., structural equation modeling analysis) allow researchers to examine simultaneously the accuracy of measurement with multiple indicators, reciprocity, and tracing earlier effects of behaviors (Bollen, 1989). Therefore, more research studies should seek development of a comprehensive model embracing the dynamics of parent-child relationship at multiple points in time in order to have a better understanding of concurrent as well as long-term effects of the reciprocity in children's development.

Summary and Research Hypotheses

High stability of aggressive behaviors and their strong association with further behavioral problems, particularly in males, have been of substantial interest and concern to researcher, educators, parents, and society. It is not surprising that aggressive behaviors have been in the spotlight of research related to children's maladjustment for the last half century.

It is apparent that parents and children have mutual, bidirectional, and reciprocal influences on each other, with harsh discipline leading to children's aggressive behaviors and aggressive behaviors' leading to harsh parenting. However, there is an ongoing debate among researchers in terms of what drives what. On one hand, there is the view that difficult children are the ones who drive harsh disciplinary tactics; on the other hand, there is the argument that parents' inept parenting skills are directing children's aggressive behaviors.

Nevertheless, there has been specific emphasis in research on the socialization process related to negative discipline techniques, and this trend supports the supremacy of parental influences in children's aggressive behaviors as well as in externalizing problem behaviors. Although the child's effect on parenting has been widely discussed, the review of previous research revealed a lack of studies which were specifically geared toward examining empirically children's effects, rather than predicting children's developmental outcomes. Further, fewer studies examined parental influences and children's effects on parents simultaneously. There exists even fewer studies acknowledging both concurrent and longitudinal effects of the reciprocal relationship in the parent-child dyads within a comprehensive theoretical model fashion.

The present study was designed to examine the longitudinal versus contemporaneous effects of the bidirectional relationships between harsh parenting and

children's aggressive behaviors on the development of adolescents' externalizing problem behaviors. Considering the literature review, the present study attempted to examine several research hypotheses. First, it was hypothesized that the high stability of aggressive behavior and externalizing behavior would exist when measured at three different points in time with a one year interval. The review of literature did not specifically reveal high stability of harsh parenting. However, it is well recognized that parents' beliefs, attitudes, disciplinary techniques are quite stable (e.g., McGillicuddy-DeLisi, 1982). Thus, the stability of harsh parenting was also hypothesized.

Secondly, it was hypothesized that harsh parenting would influence children's aggressive behaviors more contemporaneously than longitudinally. Several empirical research studies reported the significant concurrent reciprocity between parents' discipline and children's antisocial behavior consistent with coercion theory which argues that an individual's behaviors are more likely affected by recent behaviors of others (e.g., Vuchinich et al., 1992). With the same logic, it was hypothesized that children's aggressive behavior would positively influence harsh parenting in a contemporaneous fashion.

Thirdly, both harsh parenting and aggressive behavior were hypothesized to predict later externalizing problem behavior. Since few research studies have traced the reciprocity between harsh parenting and aggressive behavior in terms of developing later externalizing problem behavior, both contemporaneous and cross-lagged effects of the reciprocity were hypothesized.

Lastly, effects of both parent's and child's gender were hypothesized. There has been a large body of studies showing that boys are more overtly aggressive than girls and paternal physical punishment toward girls declines as girls become mature. Although girls may be not as aggressive physically as boys, the studies of later development of externalizing problem behavior associated with earlier aggressive behavior did not show any

significant difference between boys and girls. Therefore, comparison of boys with girls as well as comparison of mothers' harsh parenting with fathers' harsh parenting were proposed.

CHAPTER 3

METHOD

Participants and Procedures

The sample for the present study was taken from a three-wave longitudinal data set. The study, called The Iowa Adolescence Project, was originally designed to investigate in 398 intact families in a midwestern state how parental support and family economic hardships, which mainly was derived from farm crisis in the 1980s, affected adolescent's short-term and long-term development.

Twenty-seven public school districts in Iowa were selected at random but stratified by size (i.e., large, small) and location (i.e., northeast, northwest, southeast, southwest). Families with either sixth graders or eighth graders were contacted by mail through schools. The names and addresses of these families were obtained from the schools. The mailing sent to potential participant families included an introductory summary of the project describing the criteria for participation.

Three criteria were used to determine the sample of the study: whether there were two parents in the family, whether the family had a target child in the sixth or eighth grade, and whether there was a sibling within three years of the target child's age. Those families who were interested in participating in the project responded by returning a participation form indicating willingness to be contacted. An initial interview, conducted in the home, with each family was arranged by phone. During the home visit, the interviewer explained the requirements of the project and the nature of the study; those families who were willing to participate signed a consent form. Of the 464 qualifying families, 86% (398 families) agreed to participate in the study. There were 188 families that had sixth graders while 210 families had children in eighth grade.

The data sets were collected at three different periods of measurement with a one year interval from one wave to the next. Data collection for Wave 1 began in the 1988-1989 academic year; data for Wave 2 and Wave 3 were collected in the next 2 years. Each family interview was conducted by one of 12 experienced interviewers recruited by the Survey Section of the Statistical Laboratory at Iowa State University. During the home visit interview, the interviewer provided instructions to each participant, the father, the mother, the target child, and the sibling on how to complete the questionnaire. The participants were encouraged to respond to their questionnaires in separate rooms. On average, it took between one hour and one and a half hours to complete an interview. After being interviewed, all the families were rewarded with the amount of $75 at each visit.

Subject attrition has been recognized as a challenging issue in longitudinal studies (Babbie, 1995). Although this project also experienced subject attrition, the reduction rate was relatively small (6% from the wave 1 to the wave 3). A majority of families participated in the study throughout all of the periods ($\underline{N}$ = 398 at Time 1, $\underline{N}$ = 382 at Time 2, and $\underline{N}$ = 374 at Time 3, respectively).

It should be noted that, of those 398 families, the information from only 346 families was utilized for structural equation modeling analyses. Due to the nature of the structural equation modeling analysis which is multivariate analysis, listwise data deletion was inevitable; any missing data for any variable used in the structural equation modeling analyses resulted in the data deletion.

The following description of participants' characteristics is based on the information given by participating families in the first wave of data collection which was in the academic year of 1988-1989. With regard to the families' demographic characteristics, the number of family members ranged from 4 to 10 with a mean of 5.36. Of those 398 families, 187 families resided on a farm, 54 families in a rural area but not on a farm, and 157 families in a

town or city. As far as parents' characteristics are concerned, fathers' mean age was 40 years, ranging from 29 to 61 years, and mothers' mean age was 38, ranging from 28 to 50 years. Marital status of all the couples was married except for one couple responding with a 'legally separated' category. For fathers, 22 of them had been previously married once (n = 21) or twice (n = 1), and for mothers, 18 previously married once (n = 16) or twice (n = 2). Table 1 presents other demographic characteristics of the parent sample used for the analyses.

Education completed by fathers ranged from the eighth grade to professional degree levels (e.g., Ph.D., M.D.) and by mothers from eighth grade to a master's degree level. Close to half of the parents in the sample completed a high school education (for fathers, n = 194, 48.7%; for mothers, n = 181, 45.4%). The rest of the fathers' completed education levels are as follows: 5.4%, eighth grade through 11th grade; 25.2%, from 1-year to 3-year college or vocational/technical school; 14.1%, bachelor's degree; 5.6%, some graduate work or master's degree; 1.3%, professional degree. In the mothers' sample, the distribution was as follows: 2.3%, eighth grade through 11th grade; 35.1%, from 1-year to 3-year college or vocational/technical school; 13.3%, bachelor's degree; 3.8 %, some graduate work or master's degree.

A majority of the fathers were employed full-time (n = 382, 96%). There were 4 part-time employed fathers, 7 unemployed, 2 disabled, 2 full-time students without any employment, and 1 father who was a student and employed part-time. About 98% of mothers were either a full-time (43%) or part-time (33.7%) employee, or a full-time homemaker (22.1%). There were 3 full-time students and also 2 mothers who responded that they were unemployed.

Table 1

Demographic Characteristics of Parents

Characteristic	Father (N = 398)		Mother (N = 398)	
	n	%	n	%
Education				
8th grade	9	2.3	2	.5
9th grade	2	.5	0	0
10th grade	7	1.8	1	.3
11th grade	3	.8	6	1.5
High school grade (GED or equivalent)	194	48.7	181	45.4
1 year college, vocational/technical school	33	8.3	80	20.1
2 year college, vocational/technical school	50	12.6	34	8.5
3 year college, vocational/technical school	17	4.3	26	6.5
Bachelor's degree	56	14.1	53	13.3
Some graduate work	6	1.5	8	2.0
Master's degree or equivalent	15	3.8	7	1.8
Masters plus	1	.3	0	0
Ph.D., M.D., J.D., D.D.S. or equivalent	5	1.3	0	0
Employment				
Full-time	382	96.0	171	43.0
Part-time	4	1.0	134	33.7
Unemployed	7	1.8	2	.5
Full-time homemaker	0	0	88	22.1
Retired	0	0	0	0
Disabled	2	.5	0	0
Full-time student and not employed at all	2	.5	3	.8
Part-time employed and student	1	.3	0	0
Occupation				
Professional, technical	50	12.6	76	19.1
Administrative, manager, or owner	55	13.8	24	6.0
Farm operator	115	28.9	1	.3
Foreman or supervisor	13	3.3	1	.3
Skilled craftsman	40	10.1	2	.5
Clerical or sales	18	4.5	115	28.9
Operative	76	19.1	17	4.3
Farm laborer	5	1.3	2	.5
Nonfarm laborer	5	1.3	4	1.0
Service worker	8	2.0	69	17.3
Disabled entire adult life	1	.3	0	0
Homemaker	0	0	73	18.3
Farm wife (assists with farm work)	N/A	N/A	14	3.5
Full-time student	2	.5	0	0
Full-time farmer & other full-time job	6	1.5	0	0
Disabled as an adult	3	.8	0	0

Occupations were categorized according to Hollingshead's (1975) procedure; 16 levels of occupations were applied. There were 115 fathers (28.9%) whose occupation was a farm operator while 50 (12.6%) fathers had a major professional/technical occupation. In the mother's sample, 115 of them were sales/clerical workers. Excluding one father who was unemployed and not looking for a job, the rest of fathers' and mothers' distribution of occupations are shown in Table 1.

A total of 200 boys and 198 girls participated. Of these 200 boys, 93 of them were in sixth grade and 107 were eighth graders. Similarly, there were 95 sixth-grade girls and 103 eighth-grade girls. The children's age ranged from 11 years to 15 years with the mean age of 12 years and 4 months.

Measures

The three latent constructs comprising the hypothetical conceptual model proposed in the study were harsh parenting, aggressive behavior, and externalizing problem behavior. Harsh parenting was reported by the target child by filling out the Parenting Questionnaire (Roberts, Block, & Block, 1986; Schaefer, 1965); the parents assessed the target child's aggressive and externalizing problem behaviors by using the Child Behavior Checklist (CBCL) (Achenbach & Edelbrock, 1979).

In a study by Achenbach and Edelbrock (1979), parents of 450 children who were in clinical settings completed the CBCL. The study showed in a second-order factor analysis that the CBCL illuminates two fundamental behavior problems: internalizing and externalizing behaviors. The two behavior problems were divided into several segments. Aggression and delinquency appeared to be the common externalizing behaviors for 12-16 year old boys and girls, whereas schizoid was the one common internalizing behavior for the two different gender groups (for a review, see Achenbach & Edelbrock, 1979). However,

since Achenbach and Edelbrock's (1979) study tested the scale with the clinical sample, the result from the study needs to be treated with caution when applied to nonclinical samples. In the present study, the Achenbach and Edelbrock's study's factor analyses were considered as a guide to choose items from the 120 items in CBCL for the development of the measures of aggressive behavior as well as of problem behavior.

Harsh Parenting

At three different points in time, two Parenting Questionnaires were completed by the target children: one for fathers and one for mothers. The Parenting Questionnaire consisted of a total of 28 items which were designed to assess three aspects of parenting: positive reinforcement, inconsistent and harsh parenting, and monitoring. The items were selected from Schaefer's (1965) Child Report of Parental Behavior Inventory and from Roberts, Block, and Block's (1986) Child Rearing Practices Report. Examples of the questions are: "During the last year, how often did your mother/father let you know you were appreciated, loved, and respected?," "During the last year, how often did your mother/father get angry and yell at you?, " "During the last year, how often did your mother/father want to know exactly where you were and what you were doing?" The children responded to each question on a scale of 1 to 5 (1 = never, 3 = sometimes, and 5 = very often).

Using principal axis extraction and quartimax rotation, this instrument was factor analyzed separately for mothers and fathers, at Time 1, Time 2, and Time 3. One common factor emerged identifying harsh parenting practices which included 6 items: threaten punishment, nag about little things, scold for disobeying or misbehaving, yell, punish by grounding, and punish physically. It should be noted that the 6 sets of factor analyses (i.e., for both fathers and mothers at Time 1, 2, and 3) with a total of 28 items from the Parenting Questionnaire revealed several factors since the questionnaire embraced three aspects of

parenting. However, for research purposes, only the factor loadings of harsh parenting are presented in Table 2.

As shown in the table, the factor loadings ranged from .35 to .79. Reliabilities for the children's perception of the parents' harshness were .73 at Time 1, .76 at Time 2, and .75 at Time 3 for fathers; similarly, .74 at Time 1 and 2 and .77 at Time 3 for mothers. The proportion of variances in harsh parenting accounted for by the 6 items averaged approximately 36%.

Table 2

Quartimax Rotated Factor Loadings of Items on Harsh Parenting (Target Child's Report)

Items	Factor Loadings					
	Father's Harshness			Mother's Harshness		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
1. Threaten punishment	.52	.60	.68	.55	.53	.64
2. Nag about little things	.48	.51	.52	.35	.46	.60
3. Scold	.68	.72	.72	.59	.77	.66
4. Yell	.71	.79	.68	.67	.69	.73
5. Punish by grounding	.54	.52	.51	.61	.52	.61
6. Punish physically	.50	.45	.40	.50	.42	.36
N	396	379	371	395	382	372
Eigenvalue	2.01	2.24	2.14	2.05	2.11	2.26
Percent of variance	33.5	37.4	35.6	34.1	35.1	37.6
Reliability (α)	.73	.76	.75	.74	.74	.77

The 6 items were randomly selected to form two indices. The first index included threaten punishment, scold, punish by grounding; the second index was made up of nag, yell, and physical punishment. Based on the high factor loadings of the 6 items on one factor, each of the three items in each index were summed to form the two indicators of the

hypothetical latent construct, harsh parenting. For example, the latent construct of fathers' harsh parenting at Time 1 which was reported by the target child was measured by two indicators: fathers' harsh parenting index 1 (a summative score of the 3 items at Time 1) and fathers' harsh parenting index 2 (a summative score of the 3 items at Time 1).

Aggressive Behavior

Fathers and mothers separately assessed the target children's aggressive behaviors by using Achenbach and Edelbrock's (1979) Child Behavior Checklist (CBCL) at the three different points in time. The parents responded to each of the 120 items which asked whether or not the description of each question was true for the target child on a scale of 0 to 2 (0 = not true, 1 = somewhat or sometimes true, 2 = very or often true). Examples of the questions asked are "acts too young for his/her age," "overweight," "refuses to talk," "unhappy or depressed," and "vandalism."

In the present analyses, the first effort to identify items which would represent the children's aggressive behaviors was a factor analysis with 25 items. Item selection was based on the items identified as aggressive behaviors for both boys and girls in the study by Achenbach and Edelbrock (1979). Principal axis extraction and quartimax rotation were employed for both the fathers' report and the mothers' report, at Time 1, Time 2 and Time 3. In each of the six sets of factor analyses, factor loadings were ranked from the highest to the lowest. Next, each rank order set was compared to the others. Those items with factor loadings lower than .20 and which were not common across fathers, mothers, Time 1, Time 2, and Time 3 were eliminated from the next factor analyses.

The factor-analyses were performed again with a reduced number of items. After once again comparing rank orders of factor loadings and deleting unqualifying items due to

low loadings and/or not common between the six sets of analyses, 15 items emerged that had factor loadings from .35 to .70 and were consistent between fathers and mothers, at Times 1, 2, and 3. The descriptions of items and the factor loadings of these items are shown in Table 3.

Table 3

Quartimax Rotated Factor Loadings of Items on Aggressive Behavior (Parents' Report)

Items	Factor Loadings					
	Fathers			Mothers		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
1. Argue	.52	.62	.57	.59	.67	.58
2. Cruel to others	.47	.57	.51	.55	.58	.56
3. Demand a lot of attention	.46	.54	.50	.47	.61	.55
4. Disobedient at home	.53	.64	.62	.61	.67	.53
5. Easily Jealous	.49	.52	.49	.45	.62	.62
6. Feel persecuted	.43	.35	.45	.38	.47	.49
7. Scream a lot	.56	.50	.43	.53	.54	.54
8. Stubborn, sullen, or irritable	.62	.68	.54	.57	.64	.67
9. Sudden changes in mood	.54	.52	.59	.53	.56	.62
10. Sulk	.54	.51	.49	.53	.54	.58
11. Suspicious	.42	.35	.52	.35	.39	.42
12. Talk too much	.38	.49	.36	.47	.36	.38
13. Tease a lot	.44	.52	.49	.54	.51	.47
14. Temper tantrums	.66	.71	.62	.66	.70	.70
15. Unusually loud	.54	.56	.59	.55	.49	.54
N	395	374	366	397	377	367
Eigenvalue	3.94	4.53	4.23	4.25	4.80	4.64
Percent of variance	26.3	30.2	28.2	28.3	32.0	31.0
Reliability (α)	.84	.86	.85	.85	.87	.86

As summarized in Table 3, the factors composed of the 15 items accounted for on average of 30% of the variance in the parents' responses at the three different times of assessments. Reliabilities were consistently high for both the fathers and mothers at Time 1, Time 2, and Time 3 (see Table 3).

The 15 items were equally divided into three indices by assigning the first item in Table 3 to index 1, the second item to index 2, the third item to index 3 and so on. Each of the 5 items in each index was summed to create 3 composite measures. These three indices became the three indicators of the latent construct of aggressive behaviors. Hence, for example, the three indices which were created with mothers' report at Time 1 became the three indicators of the latent construct of aggressive behavior at Time 1.

Externalizing Problem Behavior

The same steps of factor analyses used in the development of the measure of aggressive behaviors were applied for the measure of externalizing problem behavior. Initially, a factor-analysis was performed with 20 items derived from the results of the factor analyses reported in the Achenbach and Edelbrock's study (1979). The 20 items were classified as delinquent behaviors for either the boys or girls in that study. It should be noted that there were 9 overlapping items between the boys and girls (e.g., alcohol/drug use, run away, bad friends) while the other 11 items belonged to only the boys' delinquency factor (e.g., vandalism, set fires) or only to the girls' delinquency factor (e.g., impulsive, secretive, prefer older children) (Achenbach and Edelbrock, 1979).

The rank orders of the factor loadings for both fathers and mothers at Time 1, 2, and 3 were compared with one another. The same criteria used to delete the items for the development of aggressive behavior measure were employed: factor loadings lower than .20 and noncommon items across the six sets of the factor analyses (i.e., for both fathers and mothers at Time 1, 2, and 3). With a reduced number of items a factor-analysis was again performed. Eight items emerged with factor loadings from .20 to .77 (Table 4).

Table 4

Quartimax Rotated Factor Loadings of Items on Externalizing Problem Behavior (Parents' Report)

Items	Factor Loadings					
	Fathers			Mothers		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
1. Bad friends	.20	.86	.61	.45	.69	.55
2. Destroy own things	.74	.71	.38	.54	.77	.74
3. Destroy others' things	.65	.58	.46	.56	.69	.66
4. Disobedient at school	.30	.53	.56	.67	.62	.71
5. Lying or cheating	.50	.63	.60	.49	.44	.57
6. Poor school work	.27	.59	.53	.47	.47	.62
7. Steals at home	.53	.57	.57	.31	.45	.57
8. Steals outside home	.31	.32	.28	.20	.21	.30
N	396	377	367	398	378	369
Eigenvalue	2.14	2.62	2.69	2.00	2.37	2.86
Percent of variance	26.7	32.7	33.6	25.0	29.6	35.7
Reliability (α)	.69	.75	.75	.69	.73	.76

The 8 items were common among the fathers, mothers, Time 1, Time 2, and Time 3. Reliabilities for these measures were satisfactory (see Table 4). On average, approximately 31% of the variance was explained by these measures.

However, the summative scores of the 8 items for both fathers and mothers at Time 1, Time 2, and Time 3 turned out highly skewed. Descriptive statistics showed that the skewness values were 2.06 for fathers (M = .93, SD = 1.46) and 1.86 for mothers (M = 1.06, SD = 1.55) at Time 1; 2.65 for fathers (M = .85, SD = 1.10) and 2.59 for mothers (M = .82, SD = 1.34) at Time 2; 2.77 for fathers (M = .67, SD = 1.33) and 2.76 for mothers (M = .86, SD = 1.64) at Time 3. Additionally, the kurtosis values were 4.91, 3.84, 7.83, 5.02, 8.74, 8.83 for the fathers and the mothers at Time 1, Time 2, and Time 3, respectively. The high

kurtosis values implied nonnormality of the error terms with possibly unequal error variances.

Rather than creating multiple indicators, a different strategy was applied in order to remedy the skewness and to shape a functional indicator of the latent construct which is externalizing problem behavior. Recall that parents responded to each item on a scale of 0 to 2. The zero response indicated that a specific description of behavior was not true for the target child, whereas either 1 or 2 showed the description was true for the child (1 = sometimes true, 2 = very true). All eight items, which were identified as externalizing problem behaviors by the factor analyses described above, were dichotomized: 0 = not true, 1 = true. The one responses across the eight items were counted. The counted number yielded one indicator of the latent construct of externalizing problem behavior for further data analyses.

Overview of Data Analyses

In order to assess (1) the cross-lagged and contemporaneous reciprocal relationship between harsh parenting and aggressive behavior and (2) the cross-lagged and contemporaneous effects of the reciprocity between the two on adolescents' externalizing behavior problem, the hypothesized conceptual model with the indicators described above were examined with structural equation modeling analyses by using LISREL VIII (Jöreskog & Sörbom, 1996). The structural equation modeling analyses allow researchers to investigate the following two aspects simultaneously: (1) the structural relationships among exogenous and endogenous variables, and (2) how well the indicators measure the latent constructs. More importantly, the structural equation modeling analyses permit measurement errors to be correlated so that especially longitudinal studies, which assess

the same measures at various points in time, can control measurement errors presented in the longitudinal designs (Bollen, 1989).

The data analyses performed in the present study had a sequential order. First of all, an investigation of the measurement model with the indicators developed for the study was conducted. Examining the measurement model as a first step in overall causal modeling analyses has an important meaning because the measurement model specifies the relationships among the latent constructs and the observed measures (Bollen, 1989). Confirmatory factor analyses tested whether or not the relevant observed measures, which were expressed in variance and covariance matrices from the given sample, did load on their appropriate hypothesized latent constructs.

In order to evaluate the structural relationships among the latent constructs, the hypothesized conceptual model was examined by employing a series of competing or nested model comparisons. Table 5 presents the summary of the structural relationships among the competing or nested models. The sequence of the model comparisons was established as follows:

The Measurement Model (The Null Model)

This model performed confirmatory factor analyses to evaluate how well the observed indicators, which were expressed by variance/covariance matrices, measured the latent constructs. This model was the most restricted model since any structural paths were not estimated. This model primarily played the role as the baseline model for the sequential model comparisons that evaluated improvement in overall model fit.

Table 5

Summary of the Structural Paths to be Estimated in a Series of Sequential Model Comparisons

Paths to be estimated	Null Model	Model 1	Model 2	Model 3	Model 3A	Model 4	Model 4A
Stability Paths							
$HP_1 \rightarrow HP_2$		X	X	X	X	X	X
$HP_2 \rightarrow HP_3$		X	X	X	X	X	X
$AB_1 \rightarrow AB_2$		X	X	X	X	X	X
$AB_2 \rightarrow AB_3$		X	X	X	X	X	X
$PB_1 \rightarrow PB_2$		X	X	X	X	X	X
$PB_2 \rightarrow PB_3$		X	X	X	X	X	X
Cross-Lagged Paths							
$HP_1 \rightarrow AB_2$			X	X	X		
$HP_2 \rightarrow AB_3$			X	X	X		
$AB_1 \rightarrow HP_2$			X	X	X		
$AB_2 \rightarrow HP_3$			X	X	X		
$HP_1 \rightarrow PB_2$				X		X	
$AB_1 \rightarrow PB_2$				X		X	
$HP_2 \rightarrow PB_3$				X		X	
$AB_2 \rightarrow PB_3$				X		X	
Cross-sectional Paths							
$HP_1 \rightarrow PB_1$					X		X
$AB_1 \rightarrow PB_1$					X		X
$HP_2 \rightarrow PB_2$					X		X
$AB_2 \rightarrow PB_2$					X		X
$HP_3 \rightarrow PB_3$					X		X
$AB_3 \rightarrow PB_3$					X		X
Bidirectional Paths							
$HP_2 \rightarrow AB_2$						X	X
$AB_2 \rightarrow HP_2$						X	X
$HP_3 \rightarrow AB_3$						X	X
$AB_3 \rightarrow HP_3$						X	X
Correlations among exogenous variables	X	X	X	X	X[a]	X	X[a]
Correlations among endogenous variables	X	X	X	X	X[a]	X[b]	
First-order serial correlations among the measurement errors			X	X	X	X	X

Note. HP = Harsh Parenting; AB = Aggressive Behavior; PB = Externalizing Problem Behavior. The subscriptions of 1, 2, and 3 refer to the three points in time.

[a] Only one correlation between harsh parenting and aggressive behavior is estimated.

[b] Two correlations are estimated: one between harsh parenting and externalizing problem behavior, the other between aggressive behavior and externalizing problem behavior.

Model 1 (The Stability Model)

This model added structural paths in the null model. This model examined stability of all three latent constructs which were measured at three different point in time. The six stability paths were introduced for harsh parenting, aggressive behavior, and externalizing problem behavior, from Time 1 to Time 2, and from Time 2 to Time 3, respectively. In addition to the stability paths, the three exogenous variables (i.e., harsh parenting, aggressive behavior, and externalizing behavior) were correlated with one another at Time 1, Time 2, and Time 3.

Model 2 (The Cross-Lagged Reciprocity)

This model was built up from the stability model (Model 1) by including cross-lagged paths between harsh parenting and aggressive behavior. Hence, harsh parenting at Time 1 predicted aggressive behavior at Time 2, aggressive behavior at Time 1 predicted harsh parenting at Time 2; equally, harsh parenting at Time 2 predicted aggressive behavior at Time 3 and aggressive behavior at Time 2 predicted harsh parenting at Time 3. In addition to introducing the cross-lagged paths, another distinction from the stability model was releasing first-order serial correlations between the indicators of the same constructs at different points in time. For example, the first indicator of harsh parenting at Time 1 was correlated with the first indicator of harsh parenting at Time 2; equally, the first indicator of harsh parenting at Time 2 was correlated with the first indicator of harsh parenting at Time 3.

However, second-order serial correlations (e.g., correlation between the first indicator of harsh parenting at Time 1 and at Time 3) were not employed since initial data analyses did not show any significant model improvement by releasing the second-order serial correlations in terms of the chi-square statistic. Thus, with regard to parsimony, only the first-order serial correlations were allowed for further data analyses. As shown in Table

5, the stability model is a special case of Model 2, which means when the cross-lagged paths and the first-order serial correlations among indicators are not allowed to be estimated, the two models are identical. Thus, the stability model (Model 1) is nested in Model 2.

Model 3 (The Cross-Lagged Effects of the Reciprocity)

This model added four cross-lagged paths in Model 2 to examine the cross-lagged effects of the reciprocity between harsh parenting and aggressive behavior on externalizing problem behavior. Hence, with maintaining the cross-lagged reciprocity paths between harsh parenting and aggressive behavior, both harsh parenting and aggressive behavior at Time 1 predicted externalizing problem behavior at Time 2; equally, both harsh parenting and aggressive behavior at Time 2 predicted externalizing problem behavior at Time 3.

In terms of model comparisons, Model 2 is a special case of Model 3 because exclusions of cross-lagged effects of the reciprocity on externalizing problem behavior in Model 3 make the two models. Thus, Model 2 is nested in Model 3.

Model 3A (The Contemporaneous Effects of the Reciprocity)

Using Model 2, this model examined the contemporaneous effects of the reciprocity between harsh parenting and aggressive behavior on externalizing problem behavior. With maintaining the cross-lagged reciprocity paths between harsh parenting and aggressive behavior, both harsh parenting and aggressive behavior at Time 1 predicted externalizing behavior at Time 1; similarly, harsh parenting and aggressive behavior at Time 2 predicted externalizing problem behavior at Time 2; and the same at Time 3.

However, in order to estimate the effects of harsh parenting and aggressive behavior on externalizing problem behavior contemporaneously, the correlations only between harsh

parenting and aggressive behavior at three different points in time were released, whereas the previous models allowed the three correlations among the three variables within the same period of time (e.g., a correlation of harsh parenting at Time 1 with aggressive behavior at Time 1, a correlation of aggressive behavior at Time 1 with externalizing problem behavior at Time 1, and a correlation of harsh parenting at Time 1 with externalizing problem behavior at Time 1). It has been widely known that when a regression path is developed between any two variables, the two variables are not supposed to be correlated.

Therefore, Model 2 is not a special case of Model 3A due to the different correlational structure. Rather, Model 1 is nested in Model 3A. However, Model 3 considered the cross-lagged reciprocity while Model 3A examined the contemporaneous effects of the reciprocity. Therefore, the two models, Model 3 and Model 3A, are competing.

Model 4 (The Cross-Lagged Effects of the Contemporaneous Reciprocity)

This model was developed to examine whether there would be significantly different cross-lagged effects on externalizing problem behavior in terms of the cross-lagged versus the concurrent relationship between harsh parenting and aggressive behavior. Thus, this model introduced the bidirectional paths between harsh parenting and aggressive behaviors both at Time 2 and Time 3. In other words, harsh parenting at Time 2 predicted aggressive behavior at Time 2; concurrently, aggressive behavior at Time 2 predicted harsh parenting at Time 2. The same bidirectional paths were drawn between harsh parenting at Time 3 and aggressive behavior at Time 3. This model is a competing model with Model 3 which examines the cross-lagged effects of the cross-lagged relationship between harsh parenting and aggressive behavior in externalizing problem behavior.

Model 4A (The Contemporaneous Effects of the Contemporaneous Reciprocity)

The only difference between this model and Model 4 was that this model investigated the contemporaneous effects with the consideration of the concurrent reciprocity between harsh parenting and aggressive behavior on externalizing problem behavior. This model is a competing model with Model 3A.

It would have been interesting to examine a model including the cross-lagged paths as well as the bidirectional paths between harsh parenting and aggressive behavior. In the initial data analyses, the researcher attempted to examine the model including the four paths (i.e., two cross-lagged paths and two bidirectional paths). However, this model could not provide any solutions after countless iterations although the model was mathematically identified by restricting each path equal to its parallel path between latent constructs at different points in time (e.g., setting the two stability paths, one, from harsh parenting at Time 1 to harsh parenting at Time 2 and the other, from harsh parenting at Time 2 to Time 3, equal to each other). This piece of evidence implied that the model estimating the cross-lags and the bidirectional paths simultaneously was not an appropriate model to capture the dynamics between harsh parenting and aggressive behavior and their cross-lagged as well as contemporaneous effects on externalizing problem behavior.

Following the sequence describe above, the comparisons of competing or nested models in terms of evaluating significant/nonsignificant changes in the chi-square statistics ($\Delta\chi^2$ / Δdf) from one model to the next allowed the researcher (1) to detect improvement in overall model fit between the data and the theoretical model and (2) to understand the importance of particular paths in the model. For example, suppose that there is a significant decrease in the chi-square statistics from Model 1 to Model 2. This significant decrease indicates an improvement in overall model fit and provides a better understanding of the

unique functions of the cross-lagged paths between harsh parenting and aggressive behavior.

In terms of evaluating overall model fit, it has been well recognized that the chi-square goodness-of-fit statistic is not sufficient for model comparisons due to the statistic's sensitivity to sample sizes. The chi-square statistics in large samples may reject competing models although the models include only trivial false; on the other hand, in small samples, the chi-square statistics accept competing models although the models may not be correct (Bentler, 1990; Bentler & Bonett, 1980). Therefore, recent studies regarding methodological issues about model fit indices encourage researchers to use more than one fit index (e.g., Bentler, 1990; Bollen, 1990). In line with the current trend, the present study accepted Bentler's (1990) and Bollen's (1990) recommendations to report not only the traditional chi-square goodness of fit index (GFI), but also the normed fit index (NFI), the nonnormed fit index (NNFI), and the comparative fit index (CFI) (for a complete justification of using these indices, see Bentler, 1990 and Bollen, 1990). In general, these fit indices larger than .90 support the models' acceptable fit.

After determining the best-fitting model throughout the model comparison sequence described above, comparisons of groups were conducted to examine the main effects of children's sex, cohort (i.e., 6th graders versus 8th graders), and the interaction effect of the two. The initial data analyses showed no significant interaction effect of the two. Therefore, the best-fitting model was reanalyzed including the two covariates: sex and cohort. The main effect of sex turned out to be more robust than that of cohort so the data were categorized by gender. The final step of data analyses was an investigation of the best-fitting model with boys only versus with girls only regardless of the cohort.

CHAPTER 4

RESULTS

In the present study, there were three latent constructs and three informants. Fathers and mothers were two independent sources of information who assessed the target children's aggressive behaviors and externalizing problem behaviors. The target children also provided assessments of fathers' harsh parenting separately from mothers' harsh parenting. To utilize more than one source of information effectively, the researcher of the study created a mother's model versus a father's model.

The mother's model was developed by using the target child's report on mother's harsh parenting, mother's evaluation of the target child's aggressive behavior, and father's assessment on the target child's externalizing problem behavior. Similarly, the father's model was composed of the target child's report on father's harsh parenting, father's assessment on the target child's aggressive behavior, and mother's report on the target child's externalizing problem behavior. The following results were based on separate data analyses of the mother's model and the father's model.

Correlational Analyses

Means, standard deviations, and intercorrelations among all the indicators measuring the 9 hypothetical latent constructs (i.e., harsh parenting, aggressive behavior, and externalizing problem behavior at Time 1, 2, 3) are presented in Table 6 for the mother's model. Strong intercorrelations among the indicators within each of the latent constructs were revealed. All correlation coefficients were significant at $p < .001$ level.

Table 6

Means, Standard Deviations, and Intercorrelations Among All the Indicators of the Latent Constructs for the Mother's Model

Latent Constructs / Indicators	1	2	3	4	5	6
Mother's Harsh Parenting						
1. Index 1 (t1)	1.00					
2. Index 2 (t1)	.66***	1.00				
3. Index 1 (t2)	.60***	.45***	1.00			
4. Index 2 (t2)	.42***	.52***	.65***	1.00		
5. Index 1 (t3)	.53***	.42***	.59***	.46***	1.00	
6. Index 2 (t3)	.41***	.46***	.52***	.60***	.65***	1.00
Aggressive Behavior						
7. Index 1 (t1)	.21***	.18***	.23***	.25***	.20***	.20***
8. Index 2 (t1)	.21***	.15**	.23***	.22***	.16**	.22***
9. Index 3 (t1)	.21***	.14**	.10	.17***	.14**	.14**
10. Index 1 (t2)	.16**	.17***	.26***	.32***	.22***	.24***
11. Index 2 (t2)	.24***	.19***	.27***	.29***	.19***	.21***
12. Index 3 (t2)	.16**	.22***	.21***	.29***	.16**	.21***
13. Index 1 (t3)	.20***	.20***	.25***	.30***	.25***	.27***
14. Index 2 (t3)	.16**	.15**	.21***	.22***	.17**	.22***
15. Index 3 (t3)	.11*	.14**	.12*	.19***	.15**	.16**
Externalizing Problem Behavior						
16. Index (t1)	.14**	.15**	.15**	.11*	.08	.09
17. Index (t2)	.13*	.17***	.14**	.12*	.11*	.12*
18. Index (t3)	.06	.13*	.11*	.09	.10	.15**
M	7.33	6.74	7.40	6.99	7.21	7.08
SD	2.62	2.11	2.54	2.15	2.57	2.21

(table continues)

Note. N = 346. Mother's harsh parenting was reported by the target child; aggressive behavior was assessed by the mother; externalizing problem was assessed by the father.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6 (continued)

Latent Constructs / Indicators	7	8	9	10	11	12
Father's Harsh Parenting						
1. Index 1 (t1)						
2. Index 2 (t1)						
3. Index 1 (t2)						
4. Index 2 (t2)						
5. Index 1 (t3)						
6. Index 2 (t3)						
Aggressive Behavior						
7. Index 1 (t1)	1.00					
8. Index 2 (t1)	.69***	1.00				
9. Index 3 (t1)	.63***	.61***	1.00			
10. Index 1 (t2)	.70***	.55***	.43***	1.00		
11. Index 2 (t2)	.62***	.65***	.50***	.73***	1.00	
12. Index 3 (t2)	.51***	.50***	.59***	.65***	.68***	1.00
13. Index 1 (t3)	.65***	.53***	.43***	.72***	.69***	.58***
14. Index 2 (t3)	.55***	.62***	.42***	.59***	.71***	.58***
15. Index 3 (t3)	.42***	.39***	.56***	.47***	.53***	.72***
Externalizing Problem Behavior						
16. Index (t1)	.32***	.28***	.28***	.35***	.34***	.35***
17. Index (t2)	.25***	.22***	.21***	.34***	.35***	.36***
18. Index (t3)	.41***	.22***	.25***	.31***	.32***	.38***
M	2.46	1.84	1.60	2.04	1.51	1.27
SD	1.68	1.56	1.62	1.62	1.58	1.51

(table continues)

Table 6 (continued)

Latent Constructs / Indicators	13	14	15	16	17	18
Father's Harsh Parenting						
1. Index 1 (t1)						
2. Index 2 (t1)						
3. Index 1 (t2)						
4. Index 2 (t2)						
5. Index 1 (t3)						
6. Index 2 (t3)						
Aggressive Behavior						
7. Index 1 (t1)						
8. Index 2 (t1)						
9. Index 3 (t1)						
10. Index 1 (t2)						
11. Index 2 (t2)						
12. Index 3 (t2)						
13. Index 1 (t3)	1.00					
14. Index 2 (t3)	.71***	1.00				
15. Index 3 (t3)	.27***	.65***	1.00			
Externalizing Problem Behavior						
16. Index (t1)	.38***	.28***	.25***	1.00		
17. Index (t2)	.39***	.32***	.27***	.70***	1.00	
18. Index (t3)	.43***	.35***	.32***	.64***	.72***	1.00
M	1.88	1.36	1.05	.92	.66	.66
SD	1.60	1.59	1.40	1.40	1.27	1.30

The range of coefficients was from .41 to .66 among the six indicators of mother's harsh parenting (the target child report); from .27 to .73 among the nine indicators of aggressive behavior (mother's report); from .64 to .72 among the three indicators of externalizing problem behavior (father's report). The high intercorrelations among the indicators within each latent construct implied that stability existed in the measures from Time 1 to Time 2 to Time 3.

With regard to the correlations of the indictors between the latent constructs, the results showed a strong association of aggressive behavior indicators with externalizing problem behavior indicators. All 27 correlation coefficients were significant (r's from .21 to .43, $p < .001$ for both). Additionally, excluding one nonsignificant correlation, all indicators of mother's harsh parenting were significantly correlated with all indicators of the mother's report on aggressive behavior (r's from .11 to .30, $p < .05$, $p < .001$, respectively).

A relatively weak correlational pattern was revealed between the indicators of the target child's report on mother's harsh parenting and the indicators of the father's report on externalizing problem behavior. Of those 18 intercorrelations, 5 of them were not significant; the rest of 13 correlation coefficients were significant but the coefficients were relatively low (r's ranged from .11 to .17, $p < .05$, $p < .001$, respectively).

Very interestingly, in the father's model, a more robust correlational pattern was found between the indicators of the target child's report on father's harsh parenting and the indicators of the mother's report on externalizing problem behavior. Of those 18 intercorrelations, 17 of them were significant. The coefficients ranged from .11 ($p < .05$) to .25 ($p < .001$). Other than that, an overall similar pattern was found in the father's model. Table 7 presents the results of the correlational analyses for the father's model. The high intercorrelations between indicators within each of the latent constructs were again

Table 7

Means, Standard Deviations, and Intercorrelations Among All the Indicators of the Latent Constructs for the Father's Model

Latent Constructs / Indicators	1	2	3	4	5	6
Father's Harsh Parenting						
1. Index 1 (t1)	1.00					
2. Index 2 (t1)	.54***	1.00				
3. Index 1 (t2)	.51***	.39***	1.00			
4. Index 2 (t2)	.37***	.54***	.61***	1.00		
5. Index 1 (t3)	.43***	.38***	.54***	.49***	1.00	
6. Index 2 (t3)	.27***	.47***	.37***	.59***	.62***	1.00
Aggressive Behavior						
7. Index 1 (t1)	.18***	.17**	.17***	.20***	.21***	.18***
8. Index 2 (t1)	.13**	.09	.14**	.14**	.12*	.10
9. Index 3 (t1)	.13**	.12*	.11*	.15**	.12*	.11*
10. Index 1 (t2)	.16**	.17**	.25***	.27***	.21***	.20***
11. Index 2 (t2)	.13**	.11*	.18***	.15**	.12*	.10
12. Index 3 (t2)	.11*	.14**	.22***	.19***	.12*	.14**
13. Index 1 (t3)	.17**	.16**	.20***	.14***	.21***	.19***
14. Index 2 (t3)	.15**	.11*	.14**	.13**	.18***	.16**
15. Index 3 (t3)	.11*	.12*	.18***	.18***	.15**	.15**
Externalizing Problem Behavior						
16. Index (t1)	.21***	.18***	.09	.16**	.16**	.15**
17. Index (t2)	.17***	.25***	.14**	.24***	.20***	.19***
18. Index (t3)	.18***	.13**	.11*	.20***	.16**	.17***
M	6.97	6.47	6.83	6.43	6.60	6.43
SD	2.47	2.34	2.32	2.12	2.21	2.03

(table continues)

Note. N = 346. Father's harsh parenting was reported by the target child; aggressive behavior was assessed by the father; externalizing problem was assessed by the mother.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7 (continued)

Latent Constructs / Indicators	7	8	9	10	11	12
Father's Harsh Parenting						
1. Index 1 (t1)						
2. Index 2 (t1)						
3. Index 1 (t2)						
4. Index 2 (t2)						
5. Index 1 (t3)						
6. Index 2 (t3)						
Aggressive Behavior						
7. Index 1 (t1)	1.00					
8. Index 2 (t1)	.70***	1.00				
9. Index 3 (t1)	.61***	.63***	1.00			
10. Index 1 (t2)	.66***	.52***	.46***	1.00		
11. Index 2 (t2)	.56***	.62***	.40***	.72***	1.00	
12. Index 3 (t2)	.47***	.42***	.50***	.67***	.67***	1.00
13. Index 1 (t3)	.63***	.50***	.46***	.63***	.60***	.59***
14. Index 2 (t3)	.55***	.57***	.42***	.57***	.71***	.55***
15. Index 3 (t3)	.42***	.40***	.53***	.52***	.53***	.62***
Externalizing Problem Behavior						
16. Index (t1)	.23***	.26***	.17**	.28***	.28***	.23***
17. Index (t2)	.18***	.19***	.14**	.24***	.26***	.24***
18. Index (t3)	.22***	.24***	.20***	.27***	.31***	.25***
M	2.53	1.78	1.60	2.04	1.31	1.10
SD	1.59	1.56	1.52	1.58	1.51	1.32

(table continues)

Table 7 (continued)

Latent Constructs / Indicators	13	14	15	16	17	18
Father's Harsh Parenting						
1. Index 1 (t1)						
2. Index 2 (t1)						
3. Index 1 (t2)						
4. Index 2 (t2)						
5. Index 1 (t3)						
6. Index 2 (t3)						
Aggressive Behavior						
7. Index 1 (t1)						
8. Index 2 (t1)						
9. Index 3 (t1)						
10. Index 1 (t2)						
11. Index 2 (t2)						
12. Index 3 (t2)						
13. Index 1 (t3)	1.00					
14. Index 2 (t3)	.70***	1.00				
15. Index 3 (t3)	.66***	.70***	1.00			
Externalizing Problem Behavior						
16. Index (t1)	.28***	.26***	.19***	1.00		
17. Index (t2)	.26***	.23***	.22***	.72***	1.00	
18. Index (t3)	.30***	.29***	.29***	.65***	.72***	1.00
M	1.79	1.14	.93	.99	.82	.76
SD	1.54	1.33	1.20	1.40	1.36	1.40

revealed. The indicators of the target child's reports on father's harsh parenting at the three different points in time revealed high correlations (r's from .27 to .62, p < .001, for all coefficients). High intercorrelations between the indicators of father's assessment of the target child's aggressive behavior (r's from .40 to .72, p < .001, for all coefficients) as well as between the indicators of the mother's evaluation of the target child's externalizing problem behavior (r's from .65 to .72, p < .001, for all coefficients) at three different times were found.

In terms of correlations of the indicators between the latent constructs, aggressive behavior was significantly associated with externalizing problem behavior (r's from .14 to .31, p < .01, p < .001, respectively). Of those 54 correlations, three correlation coefficients between the indicators of father's harsh parenting and the indicators of father's report on the target child's aggressive behavior were not significant. The rest of the correlations coefficients ranged from .11 to .27, p < .05, p < .001, respectively.

Structural Equation Modeling Analyses

The hypothesized conceptual model was evaluated with structural equation modeling analyses by using LISREL VIII (Jöreskog & Sörbom, 1996). A Pearson-Moment correlation matrix was generated using SPSS with a listwise procedure (N = 346). Correlations and standard deviations were entered into the LISREL VIII program to generate a covariance matrix for data analyses. Both the measurement model and the structural model were estimated with maximum likelihood procedures.

As mentioned previously, the present study developed separate models for the mothers and the fathers. The mother's model examined relationships among the target child's report on mother's harsh parenting, mother's report on the target child's aggressive behavior, and father's report on the child's externalizing problem behavior, whereas the father's model investigated the relationships among father's harsh parenting, father's report

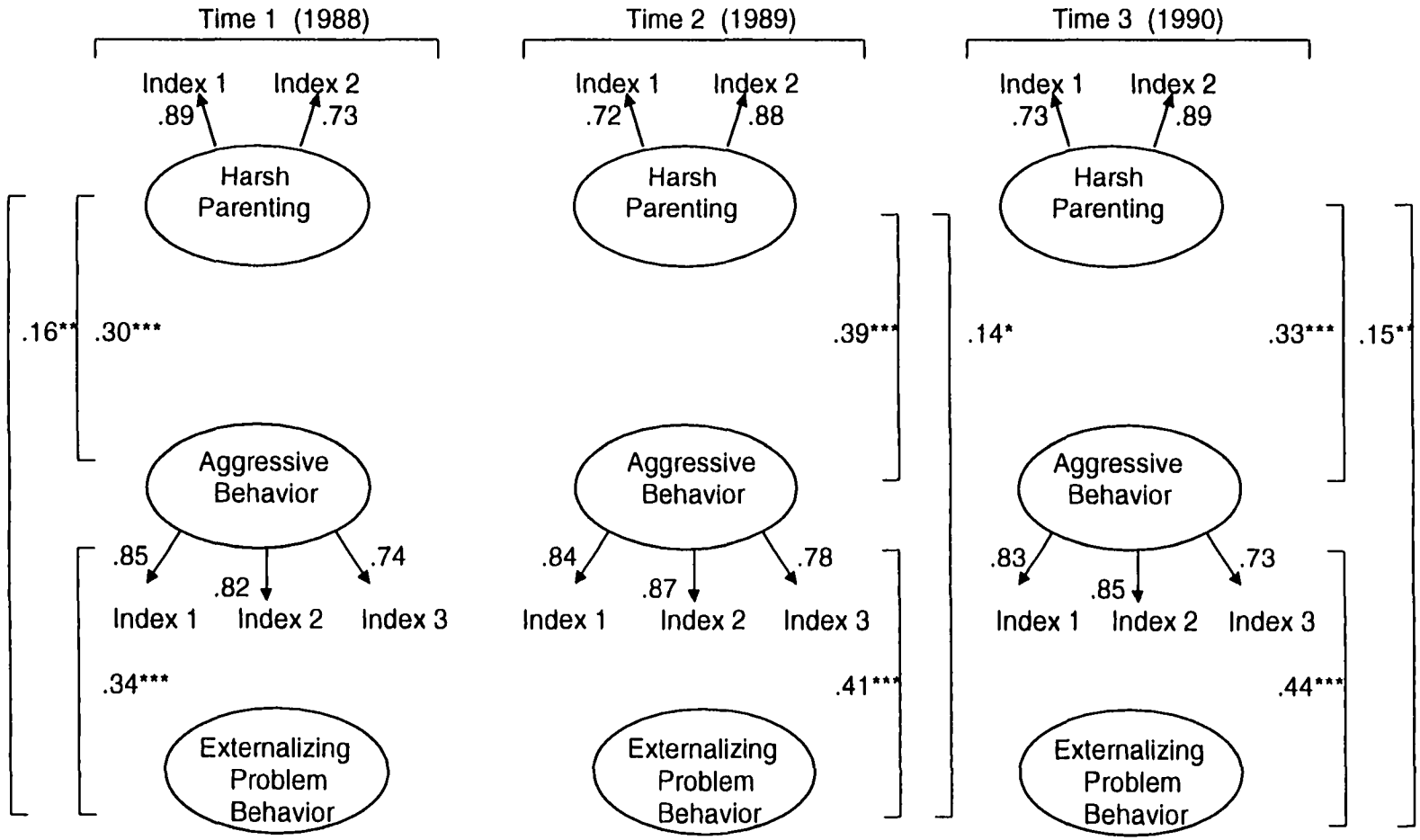
on aggressive behaviors of the target child, and mother's report on the child's externalizing problem behavior.

It should be noted that exactly the same sequence of the structural equation modeling analyses as described earlier, was employed for the mother's model and the father's model. The results are organized as follows: first of all, results of both the measurement model and the structural model are reported for the mother's model and the father's model separately. Furthermore, the measurement model, which was considered the null model in terms of the series of modeling tests, was reported first for both the mother's model and the father's model, followed by the structural model section which contains the results of the rest of the modeling sequences. A brief summary of the comparison of the results for the mother's model and the father's model is provided. Lastly, with the best-fitting model the effects of sex and cohort were examined.

The Mother's Model

The Measurement Model (The Null Model)

Figure 2 presents each indicator's factor loadings on the latent constructs as found in the confirmatory factor analyses. The range of the factor loadings (from .72 to .89) suggested that the indicators fit the latent constructs appropriately. Since the latent construct of externalizing problem behavior had only one indictor, it was assumed that there was no measurement error; consequently, all the factor loadings of externalizing problem behavior at Time 1, 2, and 3, had a factor loading value equal to one (Bollen, 1989). This model showed a huge chi-square value (i.e., 2005.29 with 129 degrees of freedom). Not surprisingly, the four fit indices were low: ranging from .46 (nonnormative fit index) up to .63 (goodness-of-fit index). The chi-square value and associated degrees of freedom from this model were used as baselines for further model comparisons. In fact, a big chi-square was



χ^2 (d.f. = 129) = 2005.29
GFI = .63
NFI = .53
NNFI = .46
CFI = .55

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 2. The Measurement Model for the Mother's Model

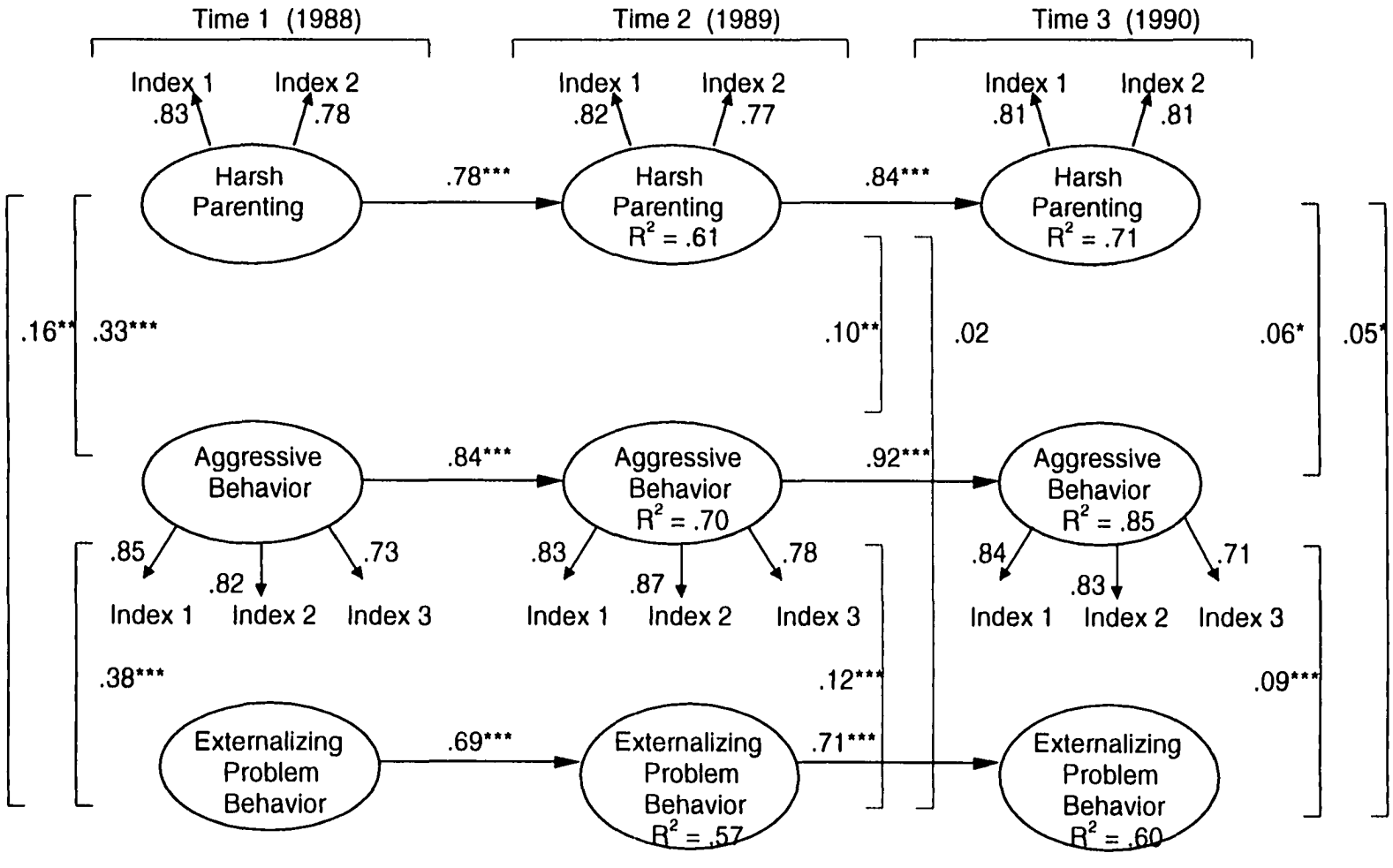
expected because this model is the most restricted model and is compared with the other models that are introduced next, in the structural model section.

The Structural Model

Model 1 (The Stability Model). As shown in Figure 3, this stability model brought a dramatic change in overall model fit. The chi-square dropped down to 585.97 from 2005.29 in the null model which was a significant improvement at $p < .001$. The four fit indices went up and ranged from .85 to .90. There was no evidence of significant changes in the factor loadings of the indicators as compared the values in the null model.

The stability paths from Time 1 to Time 2, and from Time 2 to Time 3 were very high for all constructs. Particularly, the highest path coefficient was found between the target child's aggressive behavior at Time 2 and at Time 3 ($\beta = .92$, $p < .001$). The lowest path coefficient, .69, emerged between the externalizing problem behavior from Time 1 to Time 2 but still significant ($p < .001$). In addition, the amount of variance in each latent construct accounted for was high. Especially, the amount of variance in aggressive behavior at Time 3 accounted for by the earlier aggressive behavior was 85%. Taken together, the result suggests that mother's harsh parenting, the target child's aggressive behavior as well as externalizing problem behavior were stable over time.

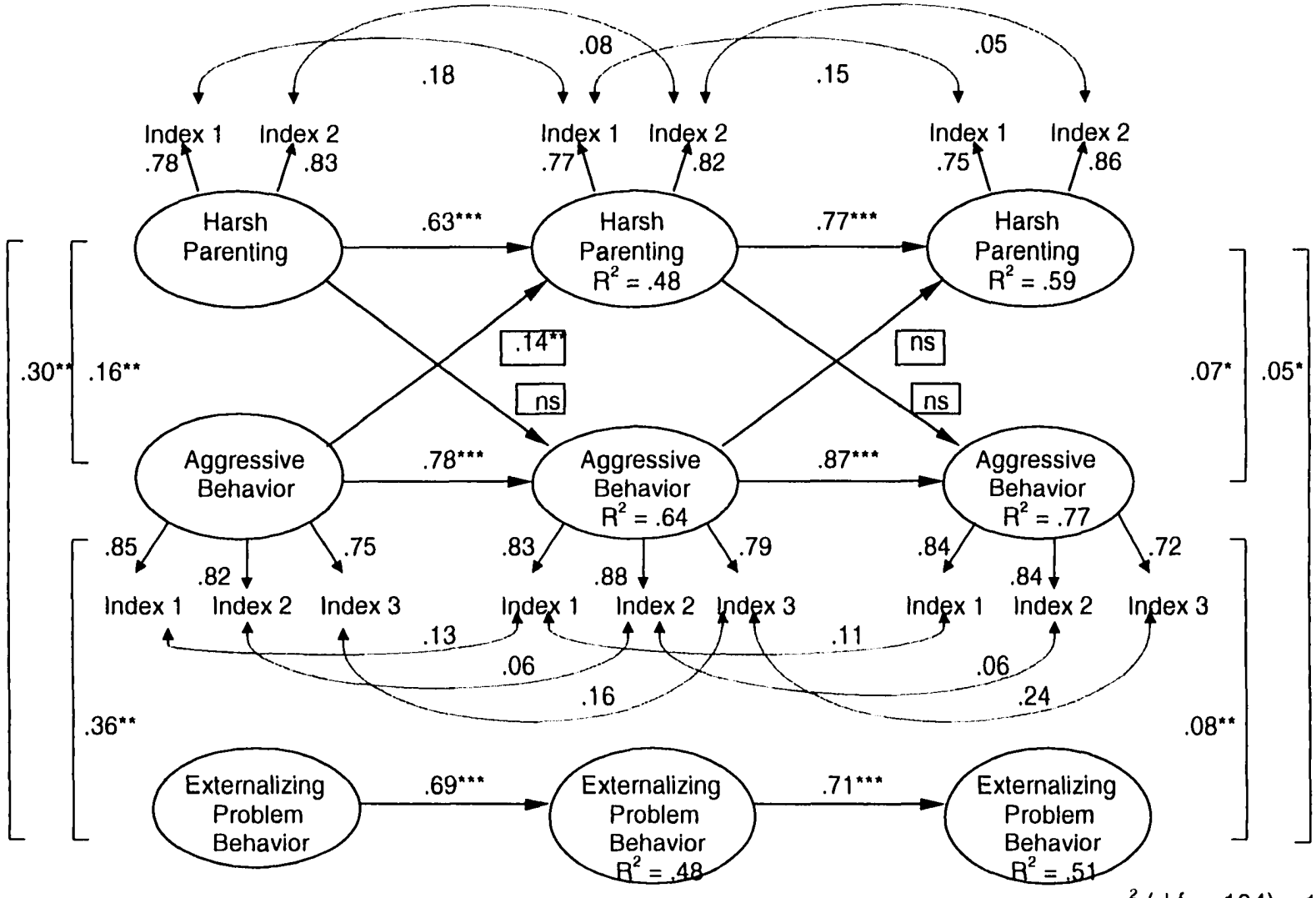
Model 2 (The Cross-Lagged Reciprocity). This model investigated the cross-lagged relationship between mother's harsh parenting and the child's aggressive behavior with the first-order serial correlations of the measurement errors (Figure 4). Of those four cross-lags, only one cross-lagged path from the target child's aggressive behavior at Time 1 to mother's harsh parenting at Time 2 turned out significant ($\beta = .14$, $p < .001$). This indicated that the target child's aggressive behavior at Time 1 significantly predicted mother's harsh parenting behavior at Time 2.



χ^2 (d.f. = 123) = 585.97
GFI = .85
NFI = .87
NNFI = .87
CFI = .90

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 3. The Stability Model for the Mother's Model



χ^2 (d.f. = 104) = 174.57
GFI = .95
NFI = .96
NNFI = .98
CFI = .98

* p < .05. ** p < .01. *** p < .001.

Figure 4. The Cross-Lagged Reciprocity Between Harsh Parenting and Aggressive Behavior in the Mother's Model

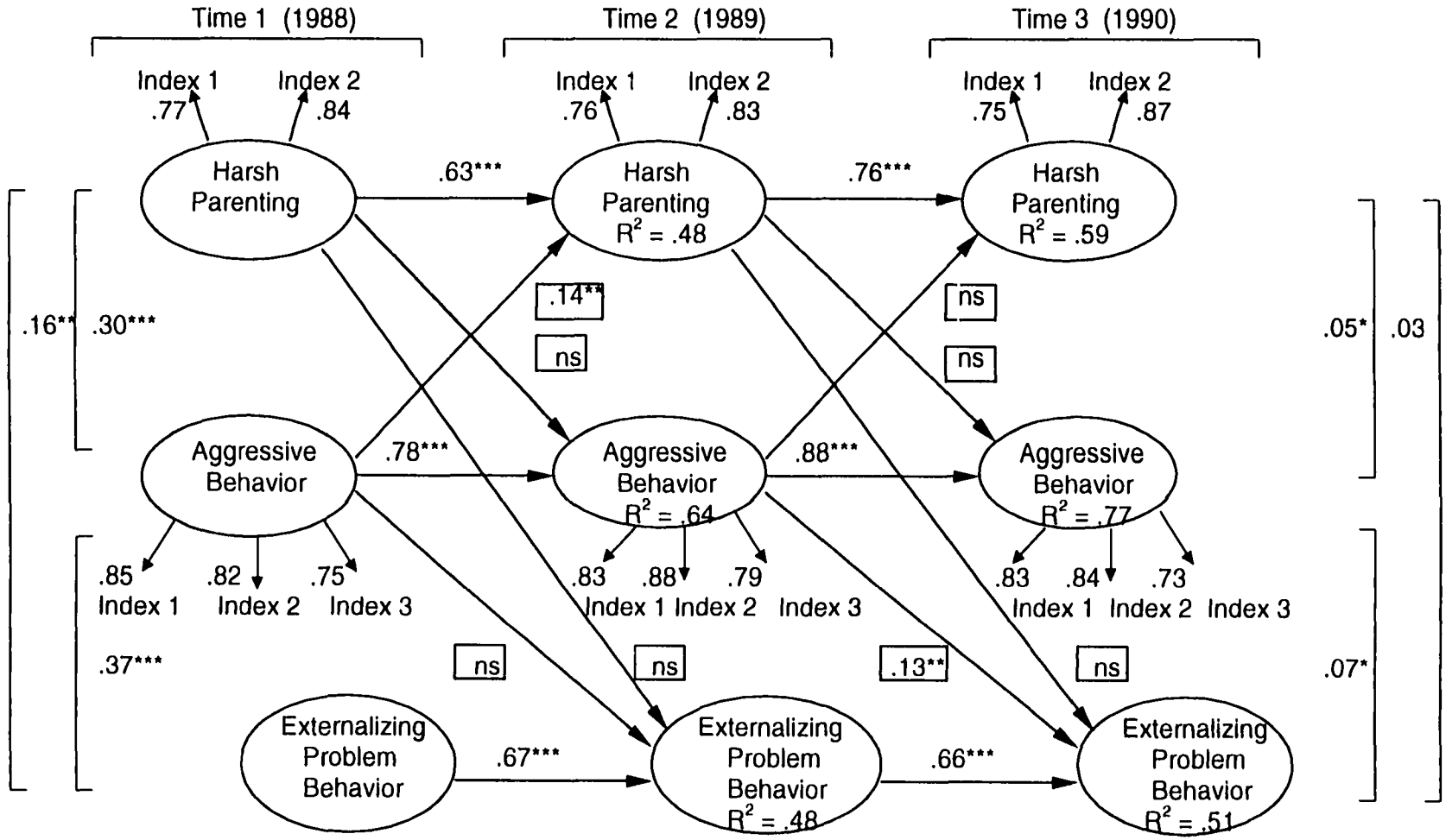
The correlations among the endogenous variables at Time 2 are not seen in the Figure 4 in order to display a better presentation. The correlations between mother's harsh parenting at Time 2 and aggressive behavior at Time 2, and externalizing problem behavior at Time 2 were .10 ($p < .001$) and .02 (ns), respectively, and the correlation between aggressive behavior and externalizing problem behavior both at Time 2 was .11 ($p < .001$).

In terms of overall model fit, the chi-square in Model 1 was dramatically reduced in this model by 411.4 (19 decrease in degrees of freedom) which yielded a significant model improvement. All four indices were over .95; therefore, this model fits the data very well.

Model 3 (The Cross-Lagged Effects of the Reciprocity). While maintaining the cross-lags between harsh parenting and aggressive behavior, four additional cross-lagged paths from both harsh parenting and aggressive behavior at Time 1 to externalizing problem behavior at Time 2, and both harsh parenting and aggressive behavior at Time 2 to externalizing problem behavior at Time 3 examined the cross-lagged effects of the reciprocity between harsh parenting and aggressive behavior in externalizing problem behavior (Figure 5).

Consistent with Model 2, aggressive behavior at Time 1 predicted significantly mother's harsh parenting at Time 2 ($\beta = .14$, $p < .001$); there were no significant relationships among mother's harsh parenting and aggressive behavior at Times 2 and 3. With regard to the cross-lagged effects of the reciprocity in externalizing problem behavior, only one significant path was found between aggressive behavior at Time 2 and externalizing problem behavior at Time 3 ($\beta = .13$, $p < .001$). On average, approximately 58% of variances in the latent constructs were accounted for by the structural relationships investigated in this model.

There was a significant improvement in overall model fit from the previous model. Although the improvement was not as dramatic as from Model 1 to Model 2, the chi-square



χ^2 (d.f. = 100) = 164.40
GFI = .95
NFI = .92
NNFI = .96
CFI = .98

* p < .05. ** p < .01. *** p < .001.

Figure 5. The Cross-Lagged Structural Relationships Among All Latent Constructs in the Mother's Model

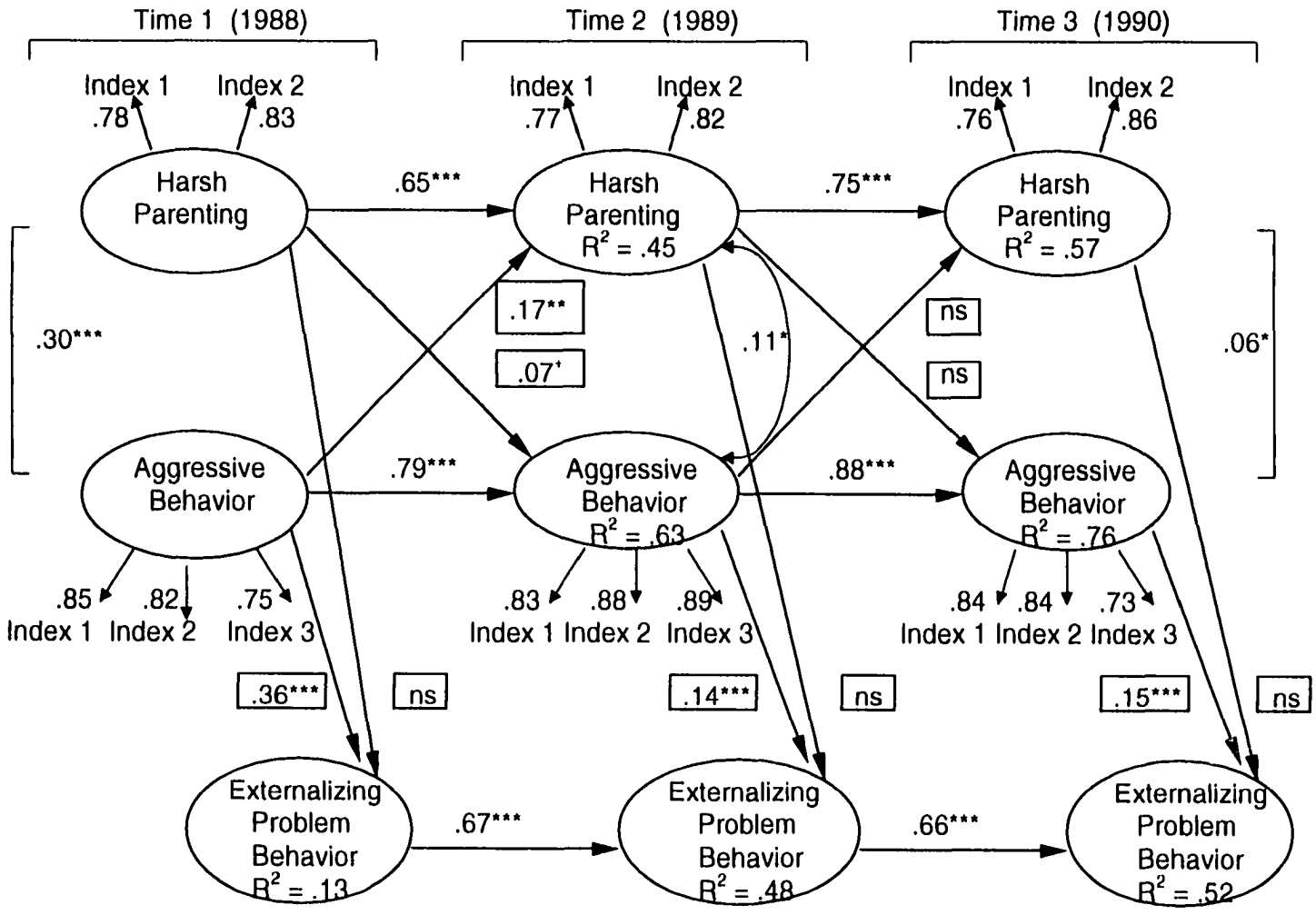
decreased by 10.17 with 4 decrease in degrees of freedom which was enough to be a significant improvement in overall model fit ($p < .05$).

It needs to be mentioned that the first-order serial correlations among the measurement errors as well as the correlations among the endogenous variables were not visualized in Figure 5. These correlations did not change much compared with the ones in the previous model. For a better presentation of model's structural relationships, further figures did not show these correlations although the correlations were estimated in each model.

Model 3A (The Contemporaneous Effects of the Reciprocity). This model examined the cross-sectional relationships among the three latent constructs at three points in time (Figure 6). The cross-lags between mother's harsh parenting and aggressive behavior were still kept in this model estimation. Consistent with Model 3, aggressive behavior at Time 1 significantly predicted mother's harsh parenting at Time 2 ($\beta = .17$, $p < .001$). On the other hand, mother's harsh parenting at Time 1 did not predict aggressive behavior at Time 2. No significant cross-lagged relationships were revealed between Time 2 and Time 3.

In terms of the contemporaneous effects of harsh parenting and aggressive behavior on externalizing problem behavior, only aggressive behavior at all three different points in time yielded significant predications of externalizing problem behavior; none of significant prediction from mother's harsh parenting to externalizing problem behavior were found. This association of aggressive behavior with externalizing problem behavior is in accord with findings from other studies.

It should be noted that this model allowed correlations only between harsh parenting and aggressive behavior; the other hierarchically/alternatively related models allowed correlations among harsh parenting, aggressive behavior, and externalizing problem



χ^2 (d.f. = 104) = 177.40
GFI = .95
NFI = .96
NNFI = .97
CFI = .98

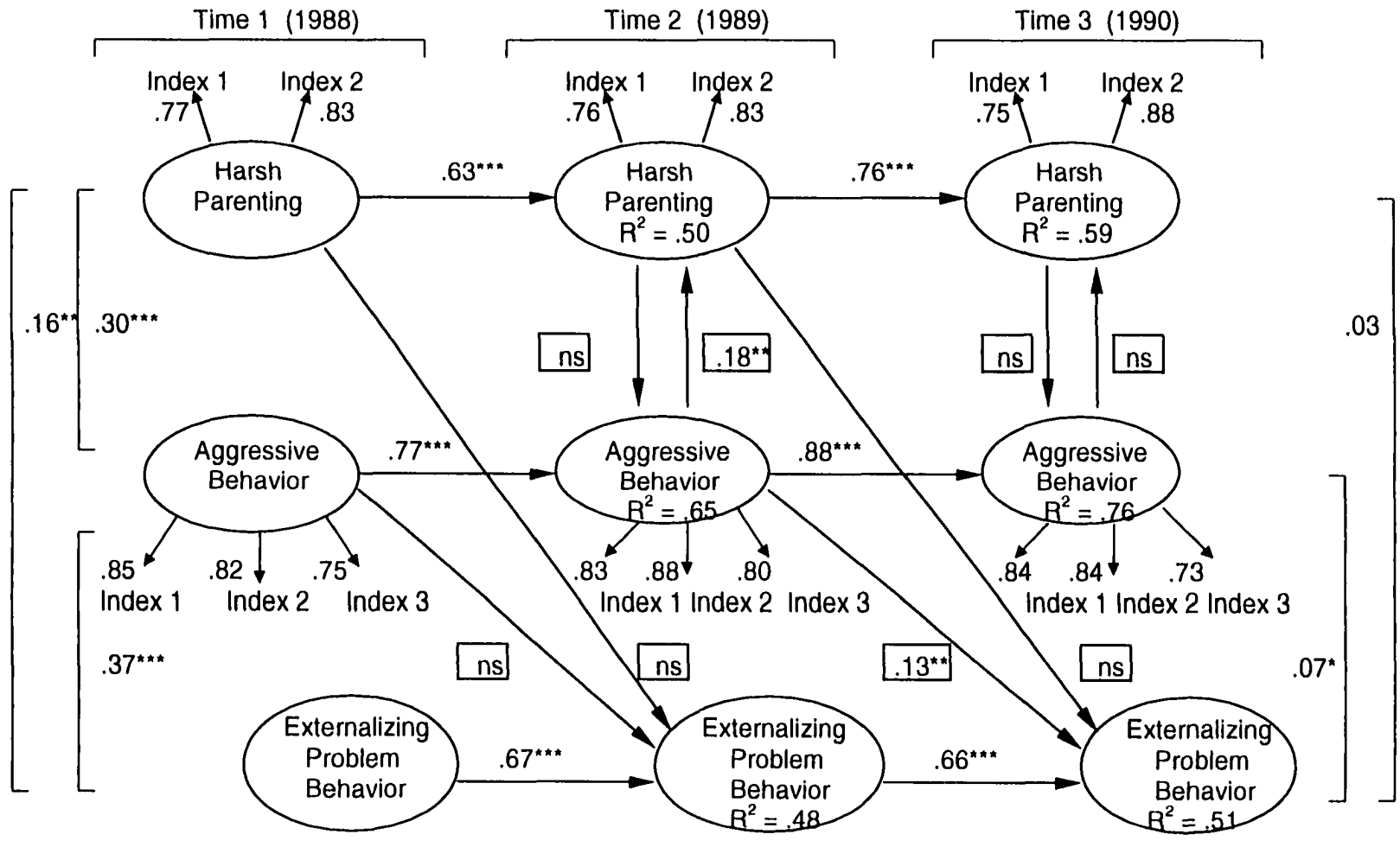
+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 6. The Contemporaneous Effects of the Cross-Lagged Reciprocity in the Mother's Model

behavior. This restriction on correlation was due to the fact that generally correlations are not introduced when prediction paths are developed between two variables. In the model of examining the contemporaneous effects of harsh parenting and aggressive behavior on externalizing problem behavior, predictions were made from harsh parenting and aggressive behavior to externalizing problem behavior. Therefore, correlations between harsh parenting and externalizing problem behavior as well as correlations between aggressive behaviors and externalizing problem behavior at all three points in time were not estimated.

This resulted in an increase of degrees of freedom. Compared with Model 3 (d.f. = 100), the degrees of freedom associated with this model were 104 although 6 contemporaneous paths were estimated; Model 3 estimated 4 cross-lagged paths. Theoretically, the degrees of freedom in this model were supposed to be lower than those in Model 3 by two. However, when 6 correlations (i.e., both between harsh parenting and externalizing problem behavior, and between aggressive behavior and externalizing problem behavior at three different times) are restricted, 6 more degrees of freedom are added. Thus, the difference in degrees of freedom from Model 3 to this model resulted in four.

Model 4 (the Cross-Lagged Effects of the Contemporaneous Reciprocity). This model was developed as a model competing with Model 3. Instead of putting the cross-lagged paths between mother's harsh parenting and aggressive behavior, this model introduced the bidirectional paths which examined the contemporaneous relationship between the two (Figure 7). In addition, correlations among the endogenous variables were estimated differently from Model 3. Since the bidirectional paths between harsh parenting and aggressive behavior at both Time 2 and Time 3 were proposed in this model, the correlations between harsh parenting and aggressive behavior at the two different times were not released. Except for these differences, the other structural relationships were the



χ^2 (d.f. = 102) = 166.94
GFI = .95
NFI = .96
NNFI = .98
CFI = .98

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 7. The Cross-Lagged Effects of the Contemporaneous Reciprocity in the Mother's Model

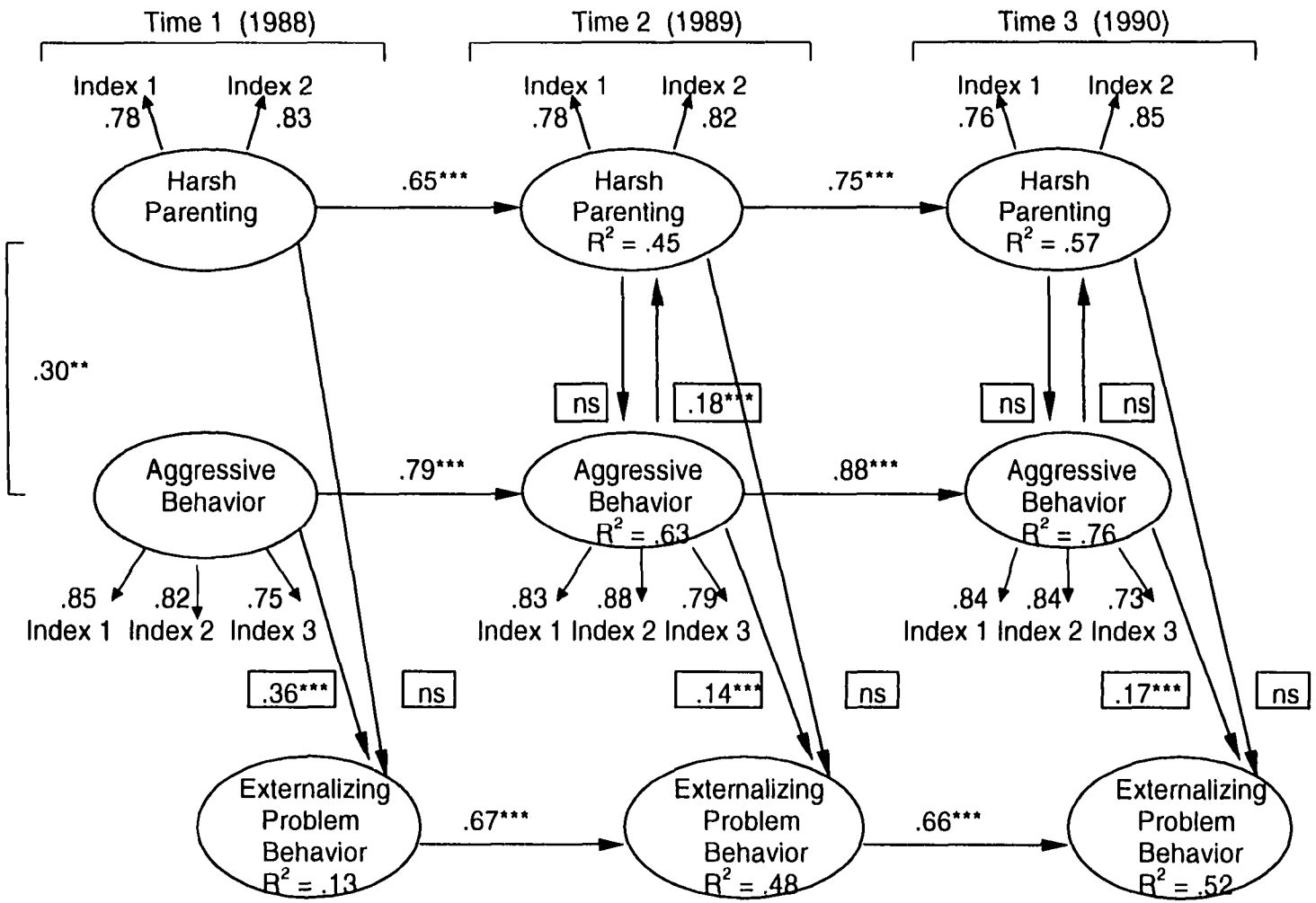
same as in Model 3 (i.e., examining the cross-lagged effects of both mother's harsh parenting and aggressive behavior).

The results showed that this model was almost identical to Model 3. The chi-square statistics as well as the degrees of freedom between Model 3 and this model were slightly different due to the different correlational structure among the endogenous variables. However, the four indices of model fit were identical; the correlation coefficients among the exogenous variables as well as among the endogenous variables were also identical.

When compared with Model 3, slightly different factor loadings and different path coefficients were found in some places, (e.g., the cross-lagged path coefficient from aggressive behavior at Time 1 to mother's harsh parenting at Time 2 in this model was .18 whereas .14 in the Model 3); however, the differences were not significant.

Model 4A (The Contemporaneous Effects of the Contemporaneous Reciprocity). This model was designed to be a competing model with Model 3A. This model maintained the bidirectional paths between harsh parenting and aggressive behavior at both Time 2 and Time 3 and examined the cross-sectional relationship among the latent constructs (Figure 8). Additionally, only one correlation between harsh parenting and aggressive behavior at Time 1 was estimated. As explained previously, the bidirectionality between harsh parenting and aggressive behavior at both Time 2 and Time 3 did not provide a logical ground for correlations.

Again, the pattern of findings of this model and Model 3A replicates the relationship between Model 3 and Model 4. All factor loadings, the stability path coefficients, and the correlation coefficient between harsh parenting and aggressive behavior at Time 1 were found to be identical. It is speculated that the slight changes in the chi-square and the degrees of freedom from Model 3A to this model, Model 4A, are due to different correlational structures among the latent constructs rather than actual change in model fit.



χ^2 (d.f. = 106) = 180.05
GFI = .95
NFI = .96
NNFI = .97
CFI = .98

* p < .05. ** p < .01. *** p < .001.

Figure 8. The Cross-Sectional Structural Relationships Among All Latent Constructs the Mother's Model

Comparison of Hierarchically/Alternatively Related Models

Table 8 summarizes the comparisons among the hierarchically or alternatively related models that have been substantially examined above. Model 0 to Model 3 are hierarchically related whereas Model 3 and Model 4, and Model 3A and Model 4A are competing alternatives. Significant changes in overall fit were made from Model 0 to Model 1, Model 1 to Model 2, and Model 2 to Model 3. As mentioned earlier, Model 3 and Model 4 turned out to be identical to each other; similarly, Model 3A and Model 4A were identical except for the differences in the chi-square and degrees of freedom due to different correlation estimations. As shown in Table 8, the best-fitting model appears to be Model 3 which examined the cross-lagged reciprocity between harsh parenting and aggressive behavior as well as the cross-lagged effects of harsh parenting and aggressive behavior on externalizing problem behavior.

Table 8

Comparison of Hierarchically/Alternatively Related Models for the Mother's Model

Model		χ^2	p	d.f.	GFI	NFI	NNFI	CFI	$\Delta\chi^2$	Δ d.f.
M0	(Figure 2)	2005.23	.000	129	.63	.53	.46	.55	--	--
M1	(Figure 3)	585.97	.000	123	.85	.87	.87	.90	1419.26***[a]	6
M2	(Figure 4)	174.57	.000	104	.95	.96	.98	.98	411.40***[b]	19
M3	(Figure 5)	164.40	.000	100	.95	.92	.96	.98	10.17***[c]	4
M3A	(Figure 6)	177.40	.000	104	.95	.96	.97	.98	408.57***[b]	19
M4	(Figure 7)	166.94	.000	102	.95	.96	.98	.98	419.03***[b]	21
M4A	(Figure 8)	180.05	.000	106	.95	.96	.97	.98	405.92***[b]	17

N = 361

[a] Comparison with Model 0
[b] Comparison with Model 1
[c] Comparison with Model 2

*** $p < .001$.

Decomposition of Total, Direct, and Indirect Effects

Table 9 presents the summary of total, direct, and indirect effects among the three latent constructs in the best-fitting model (i.e., Model 3) for the mother's model. As presented in Table 9, there were 5 significant indirect effects revealed. Of those 5 significant effects, three of them showed high stability of each latent construct (i.e., harsh parenting, aggressive behavior, and externalizing problem behavior) from Time 1 to Time 3 (.48, .69, .45, respectively; $p < .001$). This finding is evidence that stability of each variable in the present study was maintained not only within a one-year interval (direct effects) but also within a two-year interval (indirect effects).

The other two significant indirect effects were found (1) between aggressive behavior at Time 1 to harsh parenting at Time 3 and (2) between aggressive behavior at Time 1 and externalizing problem behavior at Time 3. Again, these findings are in accord with the direct effects which found a positive relationship between aggressive behavior at Time 1 and harsh parenting at Time 2, and aggressive behavior at Time 1 and externalizing problem behavior at Time 2.

In summary, the structural modeling analyses with the mother's model provided five important points. First of all, there was high stability for each latent construct. Secondly, earlier aggressive behavior of the target child led to later mother's harsh parenting; however, this was true only between Time 1 and Time 2. Mother's harsh parenting did not yield a significant prediction to aggressive behavior at any of the points in time. Thirdly, aggressive behavior predicted externalizing problem behavior; however, there was not a solid consistency in this finding because the relationship appeared to be more robust between Time 2 and Time 3, not between Time 1 and Time 2, particularly in the cross-lagged design. On the contrary, the contemporaneous relationship of the two was found at all three different points in time. Fourthly, the best-fitting model turned out to be Model 3 which examined the

Table 9

Decomposition of Total, Direct, and Indirect Effects Among the Study Variables for the Mother's Model

Responsive Variable	Explanatory Variable	Total Effect[a]	Direct Effect[a]	Indirect Effect[a]
HP (t2)	HP (t1)	.63 (9.69)	.63 (9.69)	--
	AB (t1)	.14 (2.58)	.14 (2.58)	--
AB (t2)	HP (t1)	.04 (.98)	.04 (.98)	--
	AB (t1)	.78 (15.06)	.78 (15.06)	--
EXPB (t2)	HP (t1)	.05 (1.07)	.05 (1.07)	--
	AB (t1)	.03 (.64)	.03 (.64)	--
	EXPB (t1)	.67 (16.74)	.67 (16.74)	--
HP (t3)	HP (t1)	.48 (7.87)	--	.48 (7.87)
	HP (t2)	.76 (10.37)	.76 (10.37)	--
	AB (t1)	.12 (2.16)	--	.12 (2.16)
	AB (t2)	.01 (.20)	.01 (.20)	--
AB (t3)	HP (t1)	.03 (.65)	--	.03 (.65)
	HP (t2)	-.02 (-.36)	-.02 (-.36)	--
	AB (t1)	.69 (13.22)	--	.69 (13.22)
	AB (t2)	.88 (17.10)	.88 (17.10)	--
EXPB (t3)	HP (t1)	.02 (.39)	--	.02 (.39)
	HP (t2)	-.03 (-.72)	-.03 (-.72)	--
	AB (t1)	.12 (2.55)	--	.12 (2.55)
	AB (t2)	.13 (2.85)	.13 (2.85)	--
	EXPB (t1)	.45 (11.90)	--	.45 (11.90)
	EXPB (t2)	.66 (16.97)	.66 (16.97)	--

Note. The values in parentheses are t-ratios associated with the path.

cross-lagged relationship between mother's harsh parenting and aggressive behavior as well as the cross-lagged prediction of the two on externalizing problem behavior.

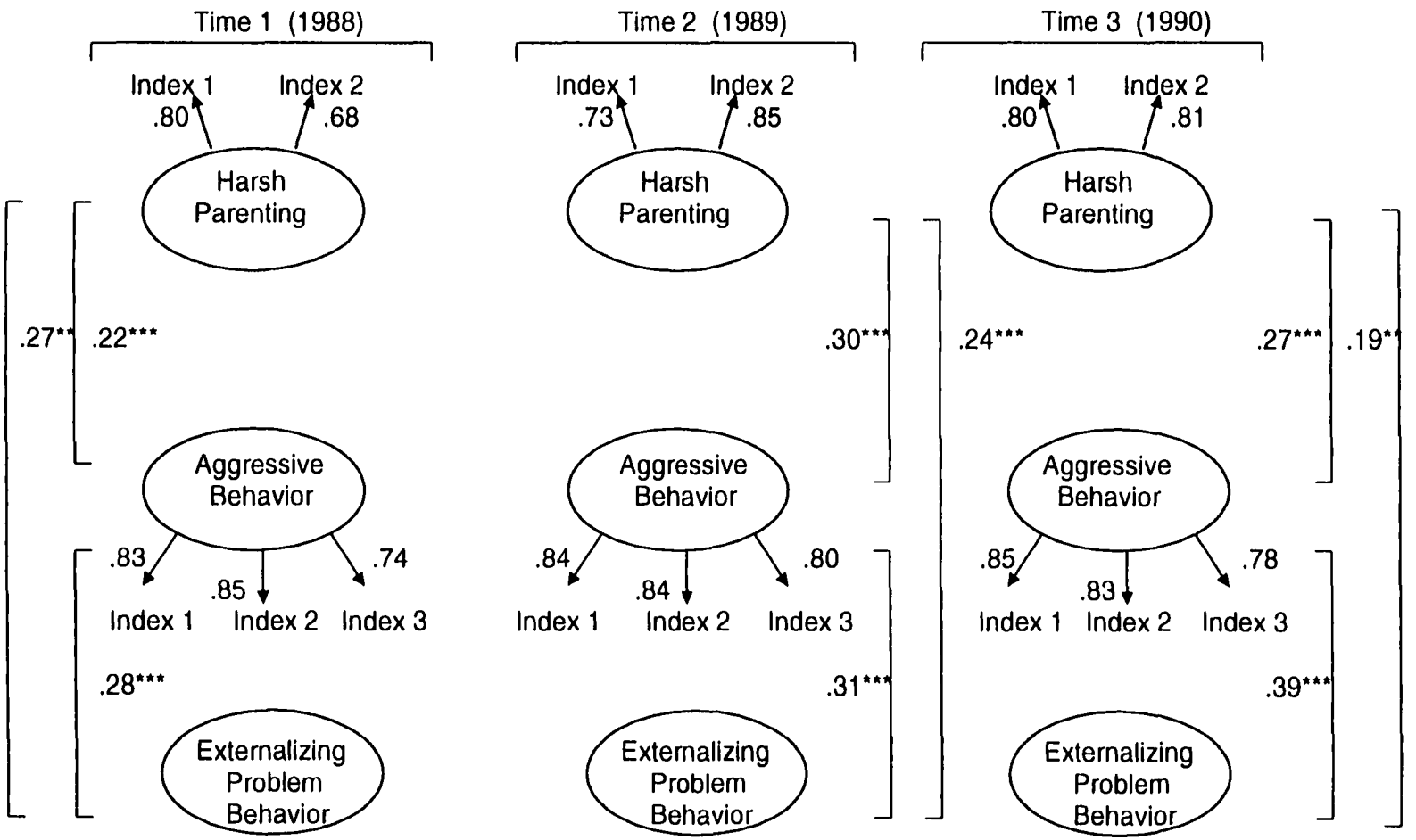
Lastly, with respect to (1) the cross-lagged versus contemporaneous reciprocity between harsh parenting and aggressive behavior and (2) the cross-lagged versus contemporaneous effects of the reciprocity on externalizing problem behavior, there was no significant difference between the cross-lagged versus the contemporaneous relationships. Therefore, further results from the data analyses for the father's model and for the examination of sex and cohort effects which will be presented in the following section, do not include the comparison between the cross-lagged versus the contemporaneous relationships among the latent constructs. Instead, the best-fitting model (i.e., Model 3) will be examined for the father's model and for the effects of sex and cohort.

The Father's Model

The exact same modeling sequences were performed for the father's model which were constructed by the target child's report of father's harsh parenting, father's report of the target child's aggressive behavior, and mother's report of the target child's externalizing problem behavior. As mentioned earlier, only the cross-lagged relationships among the study variables are examined because the cross-lagged effects and the contemporaneous effects are proved to be statistically identical to each other in the mother's model.

The Measurement Model (The Null Model)

Confirmatory factor analyses for the indicators were performed as the first step of the entire modeling sequence. Figure 9 presents each indicator's factor loadings on the latent constructs. The values of the factor loadings range from .68 to .85. These high loadings indicate that the indicators measure the latent constructs very well. Again, the latent



χ^2 (d.f. = 129) = 1807.36
GFI = .65
NFI = .54
NNFI = .48
CFI = .56

* p < .05. ** p < .01. *** p < .001.

Figure 9. The Measurement Model for the Father's Model

construct of externalizing problem behavior had only one indictor so that the factor loading of the latent construct at the three different points in time are all equal to 1.

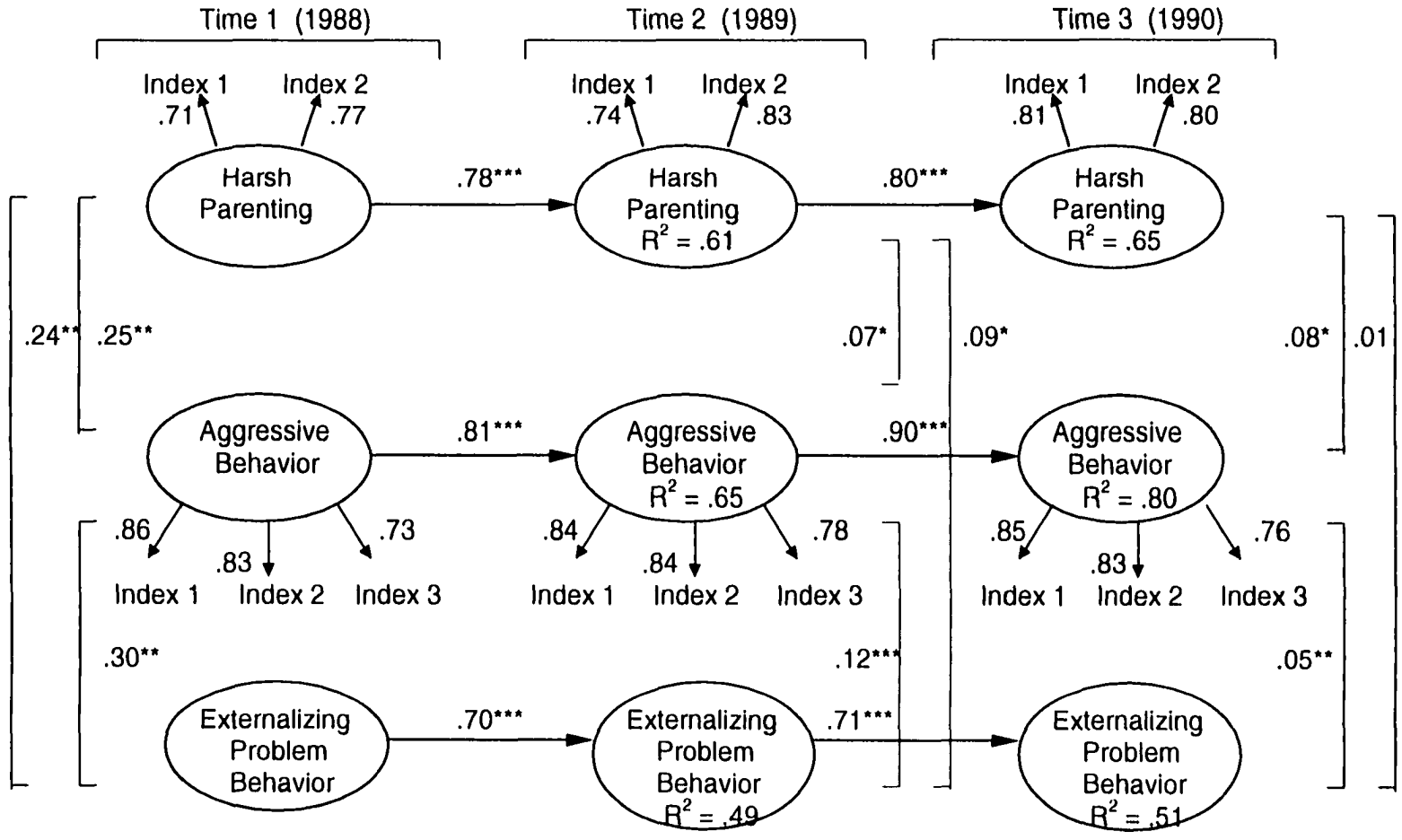
This null model turns out to have a large chi-square value (i.e., 1807.36, with 129 degrees of freedom). The four fit indices were, as expected, low: ranging from .48 (nonnormative fit index) up to .65 (goodness-of-fit index). This model serves as a baseline model for further comparison of models.

The Structural Model

Model 1 (The Stability Model). As presented in Figure 10, this stability model substantially improves over the null model. The chi-square decreased from 1807.36 in the null model to 491.50 in this model which indicated that this model was a better fit than the null model. The fit indices also supported this improvement. No significant changes in factor loadings of the indicators or the correlations among the study variables were revealed when compared to the null model.

As in the mother's model, strong stability was again found in the father's model; coefficients ranged from .70 to .90, $p < .001$. In addition, the amount of variances in the latent constructs accounted for was approximately 65% on average.

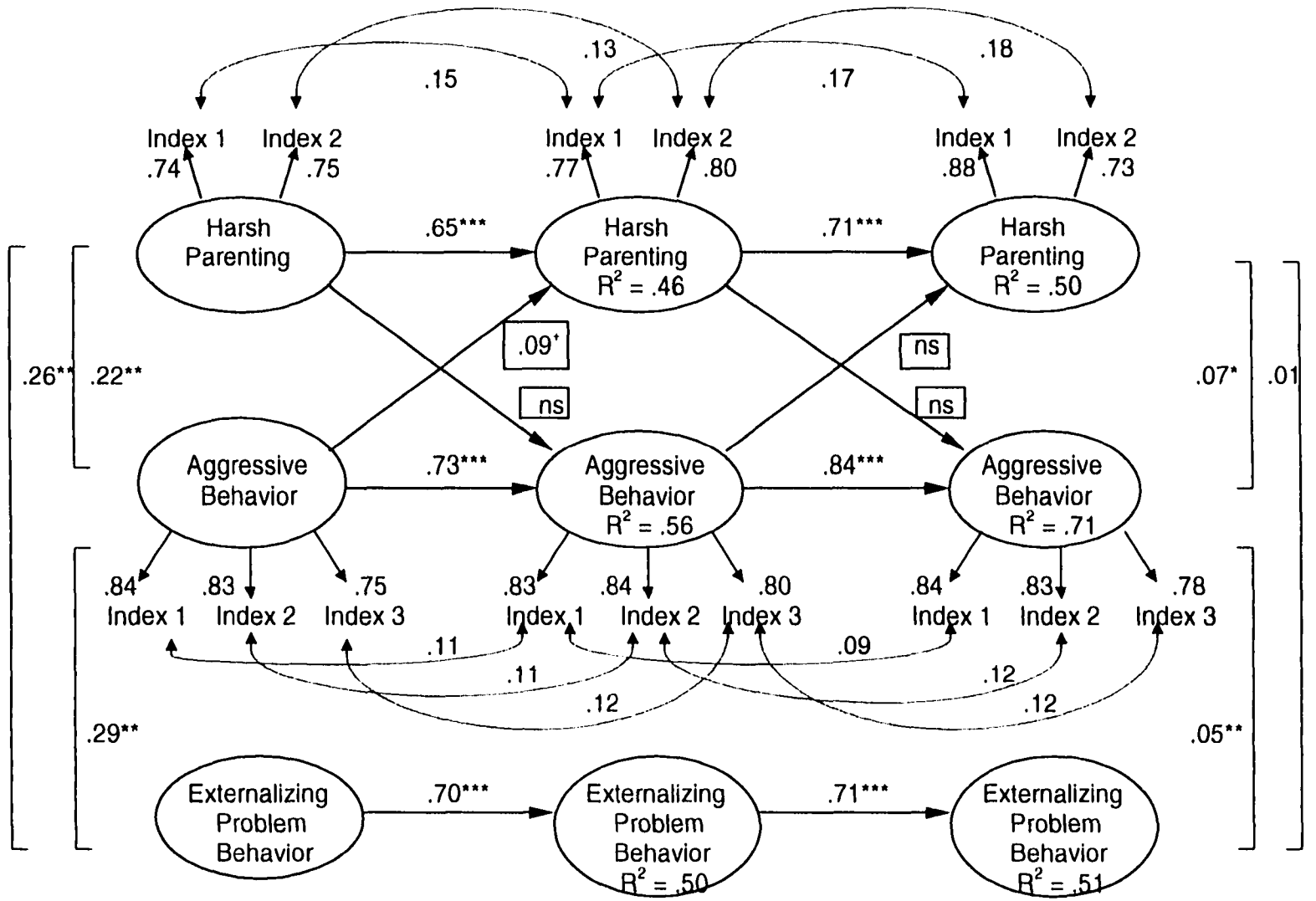
Model 2 (The Cross-Lagged Reciprocity). This model investigated the cross-lagged relationship between father's harsh parenting and the child's aggressive behavior with the first-order serial correlations among the measurement errors. Figure 11 shows the factor loadings, the stability paths, the cross-lagged paths, the correlations among the study variables, and the first-order serial correlations among the measurement errors. Aggressive behavior at Time 1 predicts father's harsh parenting at Time 2 but the significance level was marginal ($p < .10$). Other than that, there were no significant cross-lagged relationships between father's harsh parenting and aggressive behavior.



χ^2 (d.f. = 123) = 491.50
GFI = .86
NFI = .88
NNFI = .88
CFI = .90

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 10. The Stability Model for the Father's Model



χ^2 (d.f. = 104) = 157.48
GFI = .95
NFI = .96
NNFI = .98
CFI = .98

+ p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 11. The Cross-Lagged Reciprocity Between Harsh Parenting and Aggressive Behavior in the Father's Model

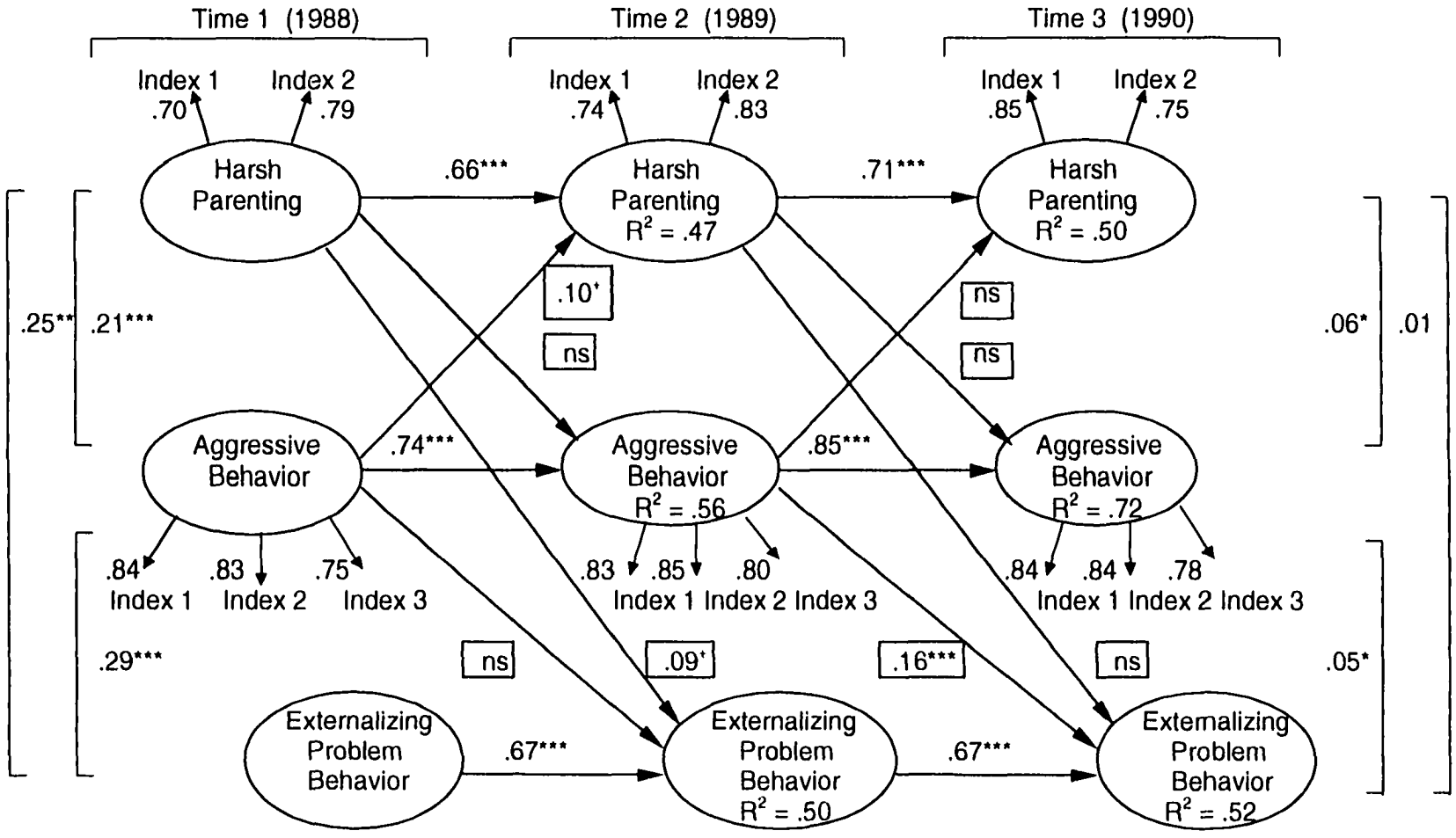
Once again, this model was improved from the previous model. A reduction of 334.02 in the chi-square (19 in degrees of freedom) as well as larger than .95 values for all four indices proved this model's better fit from the Model 1. Indeed, 54% of variances, on average, were explained by this model's structural relationships.

Model 3 (The Cross-Lagged Effects of the Reciprocity). The marginally significant relationship between aggressive behavior at Time 1 and father's harsh parenting at Time 2 was again revealed (β = .10, p < .10) (Figure 12). In addition, father's harsh parenting at Time 1 predicted externalizing problem behavior at Time 2 but the significance was also marginal (β = .09, p < .10). Except for the significant prediction by aggressive behavior at Time 2 of externalizing problem behavior at Time 3 (β = .16, p < .001), the other cross-lagged relationships did not show any significance.

Improvement in overall model fit from the previous model was made by this model. The chi-square decrease (17.32) along with a decrease of 4 in degrees of freedom confirmed that this model fit the data better than the previous model. The fit indices ranged from .96 (GFI & NFI) to .99 (CFI).

Model 3A (The Contemporaneous Effects of the Reciprocity). Figure 13 presents the cross-sectional relationships among the three latent constructs while maintaining the cross-lagged paths between father's harsh parenting and aggressive behavior. Father's harsh parenting at both Time 1 and Time 2 predicted externalizing problem behavior at Time 1 and Time 2, respectively. However, the contemporaneous effect of father's harsh parenting on externalizing problem behavior was not shown at the third point in time.

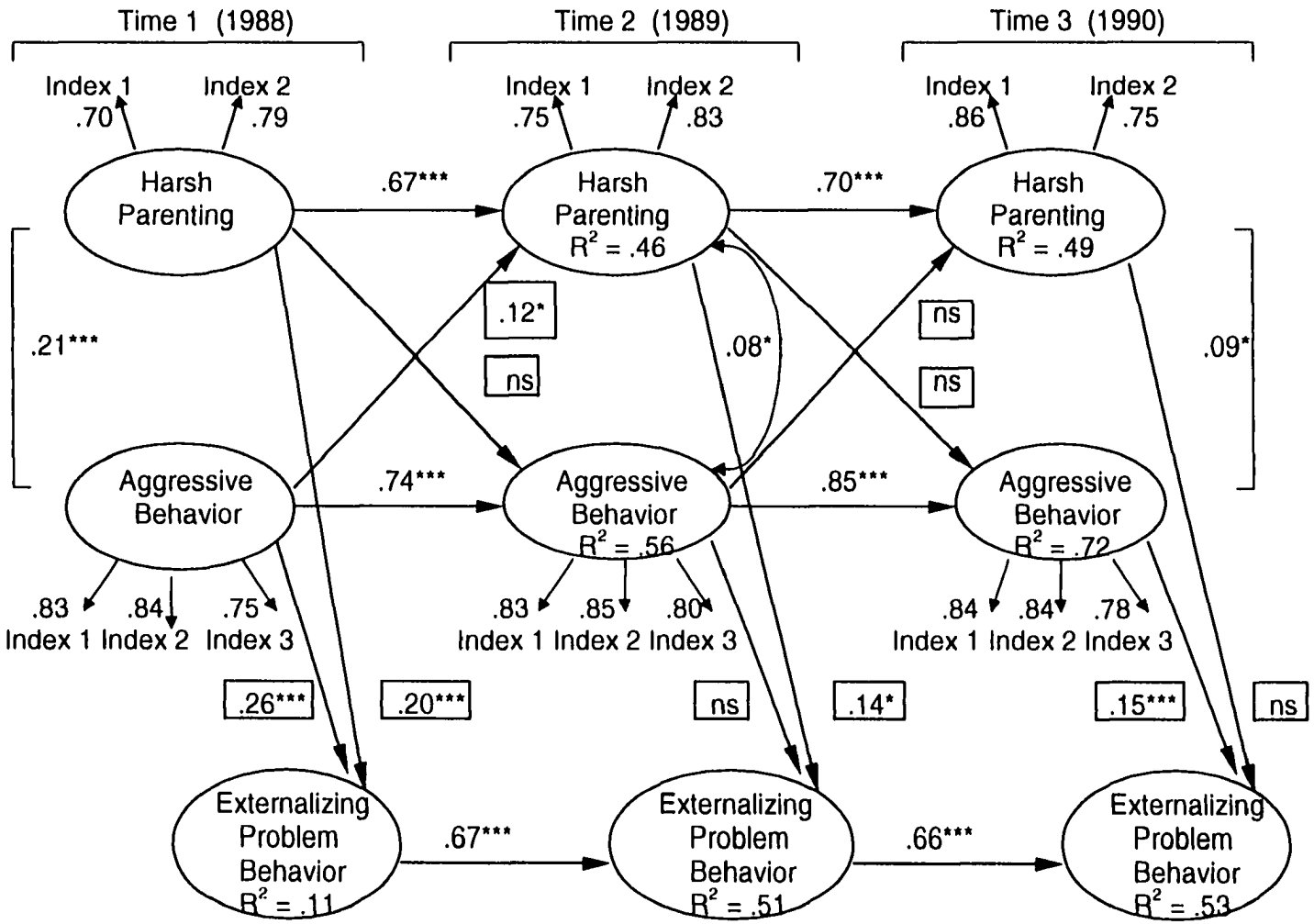
Additionally, strong predictions by aggressive behavior at Time 1 and Time 3 of externalizing problem behavior at Time 1 and 3, respectively, were revealed; however, the same pattern was not found in Time 2. In terms of the cross-lagged relationship between



χ^2 (d.f. = 100) = 140.16
GFI = .96
NFI = .96
NNFI = .98
CFI = .99

+ p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 12. The Cross-Lagged Structural Relationships Among All Latent Constructs in the Father's Model



χ^2 (d.f. = 104) = 141.47
GFI = .96
NFI = .96
NNFI = .99
CFI = .99

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 13. The Contemporaneous Effects of the Cross-Lagged Reciprocity in the Father's Model

harsh parenting and aggressive behavior, aggressive behavior at Time 1 significantly predicted father's harsh parenting at Time 2 (β = .12, p < .05).

Comparison of Hierarchically/Alternatively Related Models

Table 10 presents the summary of model comparisons. It revealed that Model 3 was the best-fitting model which investigated the cross-lagged reciprocity between harsh parenting and aggressive behavior and the cross-lagged effects of the two on externalizing problem behavior. Considering the relatively big sample size (i.e., 358 families), the chi-square associated with Model 3 (140.16, p < .01) was satisfactory.

Table 10

Comparison of Hierarchically/Alternatively Related Models for the Father's Model

Model		χ^2	p	d.f.	GFI	NFI	NNFI	CFI	$\Delta\chi^2$	Δ d.f.
M0	(Figure 9)	1807.36	.000	129	.65	.54	.48	.56	--	--
M1	(Figure 10)	491.50	.000	123	.86	.88	.88	.90	1315.86***[a]	6
M2	(Figure 11)	157.48	.001	104	.95	.96	.98	.98	334.02***[b]	19
M3	(Figure 12)	140.16	.010	100	.96	.96	.98	.99	17.32***[c]	4
M3A	(Figure 13)	141.47	.009	104	.96	.96	.99	.99	350.03***[b]	19

N = 358

[a] Comparison with Model 0
[b] Comparison with Model 1
[c] Comparison with Model 2

*** p < .001.

Decomposition of Total, Direct, and Indirect Effects

Total, direct, and indirect effects among the three latent constructs in the best-fitting model (Model 3) were examined (Table 11). Similar to the mother's model, the father's model showed significant indirect effects which ultimately implied high stability between the three latent variables at Time 1 and at Time 3; the direct effects confirmed the high stability

Table 11

Decomposition of Total, Direct, and Indirect Effects Among the Study Variables for the Father's Model

Responsive Variable	Explanatory Variable	Total Effect[a]	Direct Effect[a]	Indirect Effect[a]
HP (t2)	HP (t1)	.66 (8.83)	.66 (8.83)	--
	AB (t1)	.10 (1.78)	.10 (1.78)	--
AB (t2)	HP (t1)	.06 (1.24)	.06 (1.24)	--
	AB (t1)	.74 (13.67)	.74 (13.67)	--
EXPB (t2)	HP (t1)	.09 (1.88)	.09 (1.88)	--
	AB (t1)	.02 (.52)	.02 (.52)	--
	EXPB (t1)	.67 (16.90)	.67 (16.90)	--
HP (t3)	HP (t1)	.47 (7.65)	--	.47 (7.56)
	HP (t2)	.71 (10.59)	.71 (10.59)	--
	AB (t1)	.07 (1.44)	--	.07 (1.44)
	AB (t2)	.00 (.08)	.00 (.08)	--
AB (t3)	HP (t1)	.05 (1.01)	--	.05 (1.01)
	HP (t2)	-.01 (-.14)	-.01 (-.14)	--
	AB (t1)	.63 (11.97)	--	.63 (11.97)
	AB (t2)	.85 (16.26)	.85 (16.26)	--
EXPB (t3)	HP (t1)	.06 (1.38)	--	.06 (1.38)
	HP (t2)	-.01 (-.30)	-.01 (-.30)	--
	AB (t1)	.13 (2.98)	--	.13 (2.98)
	AB (t2)	.16 (3.64)	.16 (3.64)	--
	EXPB (t1)	.45 (12.09)	--	.45 (12.09)
	EXPB (t2)	.67 (17.34)	.67 (17.34)	--

Note. The values in parentheses are t-ratios associated with the path.

between Time 1 and Time 2. However, in contrast to the mother's model, there was one more significant indirect effect in addition to the stability; aggressive behavior at Time 1 indirectly predicted externalizing problem behavior at Time 3. No indirect effects of harsh parenting and aggressive behavior were found.

In summary, the father's model revealed high stability of the study's variables over three different points in time. There was a relatively weak relationship between aggressive behavior at Time 1 and father's harsh parenting at Time 2. In the modeling series, only one model revealed a significance at $p < .05$. However, father's harsh parenting appeared to have a stronger contemporaneous impact than the cross-lagged effect on externalizing problem behavior; contemporaneous effects were present at both Time 1 and Time 2 ($p < .001$, $p < .05$, respectively) while the cross-lagged from father's harsh parenting at Time 1 to externalizing problem behavior at Time 2 was marginal at $p < .10$. In terms of model fit, the third model, which examined the cross-lagged effects of the cross-lagged reciprocity between harsh parenting and aggressive behavior on externalizing problem behavior, turned out to be the best-fitting model; this was consistent with the mother's model.

Comparisons Between the Mother's Model and the Father's Model

Three common results emerged from both the mother's and the father's models. First of all, high stability for each latent construct (i.e., harsh parenting, aggressive behavior, an externalizing problem behavior) was revealed consistently throughout the entire modeling analyses. Secondly, a cross-lagged relationship between aggressive behavior at Time 2 and externalizing problem behavior at Time 3, and a contemporaneous relationship between the two at Times 1 and 3 but not at Time 2 existed in both the mother's and the father's

models. The last commonality found was that the best-fitting model was Model 3, which investigated the cross-lagged structural relationships among the latent constructs at three different points in time.

However, two explicit differences were observed between the mother's and the father's model. In the mother's model, earlier target child's aggressive behavior increased later mother's harsh parenting; however, this result was found only between Time 1 and Time 2. Mother's harsh parenting did not make any difference in the target child's aggressive behavior nor in externalizing problem behavior, either longitudinally or contemporaneously.

In the father's model, earlier target child's aggressive behavior did not show such a strong relationship with later harsh parenting. Instead, the contemporaneous effect of father's harsh parenting on externalizing problem behavior only was salient. The cross-lagged effect of earlier father's harsh parenting on later externalizing problem behavior was significant at the marginal level.

The Effects of Sex and Cohort

The structural equation modeling analyses for both the mother's and the father's model revealed that the model investigating the cross-lagged relationships among the latent constructs was the best-fitting model. To examine the effects of sex and cohort of the target children (i.e., 6th graders versus 8th graders), the best-fitting model was analyzed with two covariates: sex and cohort. However, before reanalyzing the model with the covariates, analyses of variance with sex and cohort were performed first to detect whether or not a significant interaction effect between sex and cohort existed.

Table 12 summarizes means and ANOVA results for sex and cohort. There was a strong main effect of sex for externalizing problem behavior only. All six indicators, mothers'

Table 12

Means and Analysis of Variance for the Main and Interaction Effects of Sex and Cohort

	Boys (Means)		Girls (Means)		ANOVA (F Values)		
	6th	8th	6th	8th	Sex	Cohort	Sex X Cohort
Harsh Parenting (Target Child Report)							
Father's Harshness (t1)	13.49	13.92	13.34	13.27	.92	.18	.35
Father's Harshness (t2)	13.52	13.56	13.03	13.02	1.50	.01	.00
Father's Harshness (t3)	13.51	13.43	13.00	13.33	.00	1.07	.06
Mother's Harshness (t1)	13.75	14.48	13.30	15.07	.03	8.65***	1.52
Mother's Harshness (t2)	14.27	14.54	13.96	14.94	.01	2.11	.07
Mother's Harshness (t3)	13.51	14.51	14.20	15.26	2.57	5.31	.00
Aggressive Behavior							
Father's Report (t1)	6.22	5.85	6.09	5.23	.87	2.30	.38
Father's Report (t2)	5.11	4.48	4.80	3.57	2.26	5.24**	.52
Father's Report (t3)	4.34	3.72	4.24	3.31	.46	4.20*	.16
Mother's Report (t1)	6.13	5.97	6.22	5.67	.06	.66	.21
Mother's Report (t2)	5.16	5.17	5.25	3.94	1.71	2.18	2.27
Mother's Report (t3)	4.36	4.20	5.40	3.59	.27	5.44**	3.8*
Externalizing Problem Behavior							
Father's Report (t1)	1.31	1.23	.56	.54	28.68***	.18	.06
Father's Report (t2)	.87	1.03	.36	.27	26.5***	.08	.97
Father's Report (t3)	.82	.89	.39	.34	15.39***	.00	.23
Mother's Report (t1)	1.57	1.33	.63	.53	39.25***	1.52	.28
Mother's Report (t2)	1.25	1.17	.40	.38	39.67***	.15	.05
Mother's Report (t3)	1.04	.98	.43	.47	16.97***	.01	.13

* $p < .05$. ** $p < .01$. *** $p < .001$.

and fathers' reports of externalizing problem behavior at all three times, revealed the significant effect of sex. A main effect of cohort appeared to be scattered across latent constructs and time. In terms of harsh parenting, only the target child's report of mother's harsh parenting at Time 1 showed a significant effect of cohort. A main effect of cohort was also found for fathers' reports of the target children's aggressive behavior at Times 2 and 3, and for mothers' report of aggressive behavior at Time 3. No effect of cohort was found for externalizing problem behavior.

The interaction effect of the sex and cohort did not seem to be robust. Only one significant interaction effect was found for mother's report of the target child's aggressive behavior at Time 3.

The following report of the structural equation modeling analyses with the two covariates were from two separate data analyses (i.e., one with the covariate of sex and the other with the covariate of cohort) for both the mother's model and the father's model. Table 13 presents the path coefficients between the covariates and the three latent constructs at the three points in time. With respect to the covariate of sex, significant paths were found between sex and externalizing problem behavior at Time 1 and Time 2 for the father's model and at Time 1 only for the mother's model. Boys were coded as 0 whereas girls were coded 1. Therefore, the negative coefficients mean that boys were more likely to display externalizing problem behavior than girls.

There were also several cohort effects. In the father's model, sixth graders were more aggressive than eighth graders at Time 1 only. On the other hand, in the mother's model, the same result of the association of aggressive behavior with cohort was found only at Time 2. For the mother's model only, the 8th graders were more likely than the 6th graders to perceive their mothers' parenting as harsh ($\beta = .18$, $p < .05$).

Table 13

Completely Standardized Coefficients Between the Two Covariates and the Latent Constructs

	Father's Model[a]		Mother's Model[b]	
	Sex[c]	Cohort[d]	Sex	Cohort
Harsh Parenting (t1)	-.05	.03	.02	.18*
Harsh Parenting (t2)	.02	.01	-.01	-.02
Harsh Parenting (t3)	.05	-.07	.08	.05
Aggressive Behavior (t1)	-.06	-.10*	-.04	-.01
Aggressive Behavior (t2)	-.06	-.06	-.05	-.10*
Aggressive Behavior (t3)	.07	.00	.07	-.05
Externalizing Problem Behavior (t1)	-.32**	-.07	-.26**	-.03
Externalizing Problem Behavior (t2)	-.11*	.01	-.10	.01
Externalizing Problem Behavior (t3)	.02	.03	-.02	.00
N	358	358	361	361
χ^2 (d.f. = 109)	149.87	145.81	172.05	176.37
GFI	.96	.95	.97	.92
NFI	.97	.96	.97	.95
NNFI	.98	.96	.98	.95
CFI	.98	.96	.98	.96

[a] Father's model includes the target child's report on father's harsh parenting, father's report on the target child's aggressive behavior, and mother's report on the target child's externalizing problem behavior.

[b] Mother's model includes the target child's mother's harsh parenting, mother's assessment of the target child's aggressive behavior, and father's report on the target child's externalizing problem behavior.

[c] Sex: 0 = Boys, 1 = Girls

[d] Cohort: 0 = Sixth Graders, 1 = Eighth Graders

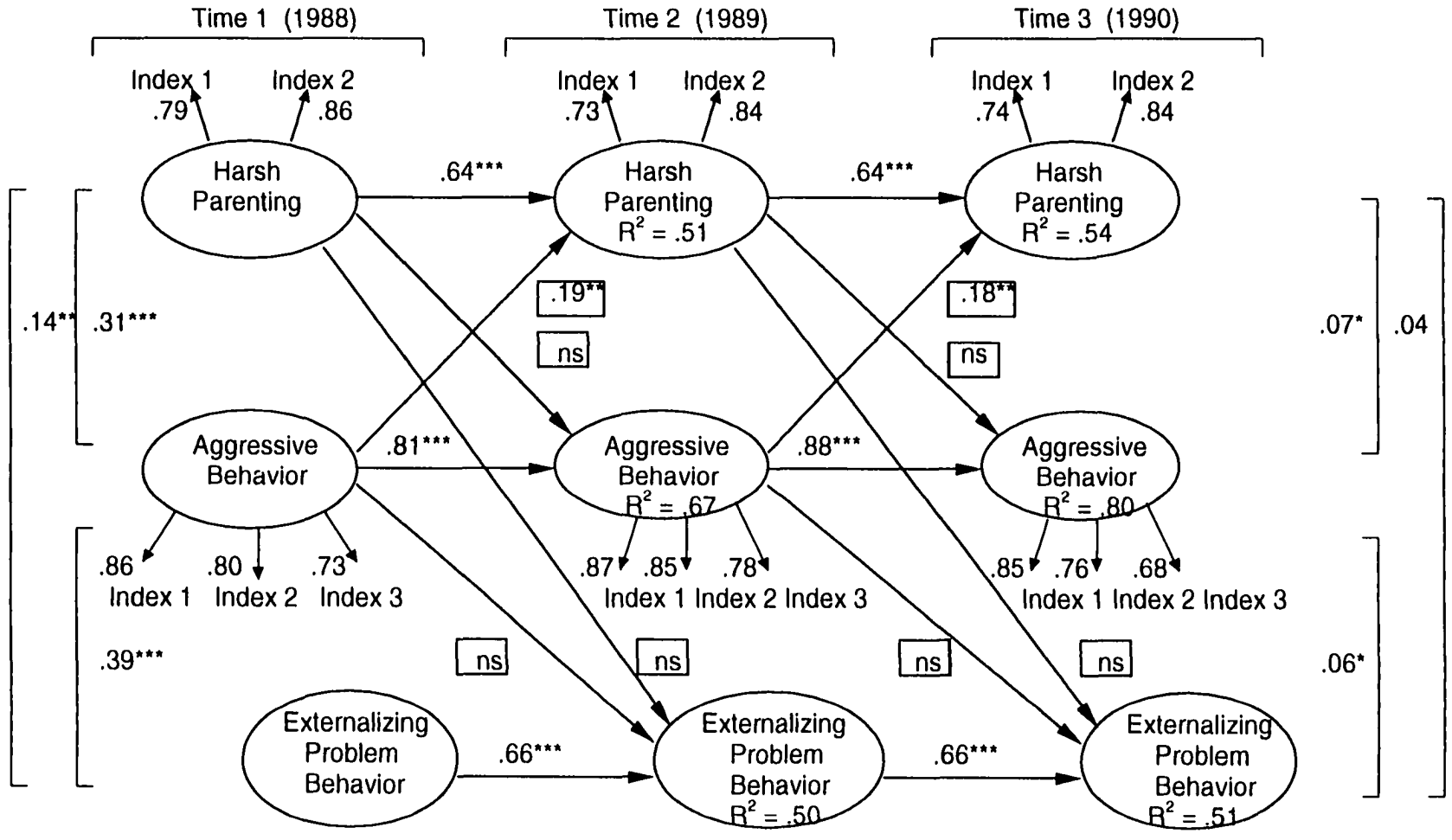
* $p < .05$. ** $p < .01$.

As the final step of the entire data analyses for the present study, the data set was divided by sex of the target child and the best-fitting model (i.e., the model examining the cross-lagged reciprocity between harsh parenting and aggressive behavior and predicting externalizing problem behavior longitudinally) was reanalyzed using the two different subsamples for both the mother's model and the father's model.

Figure 14 and Figure 15 present results of the model estimations using the boys' data only for both the mother's model and the father's model. The noticeable contrast of the mother's with the father's model was that boys' aggressive behavior at both Time 1 and Time 2 in the mother's model significantly predicted mothers' harsh parenting at Time 2 and Time 3, respectively (Figure 14); none of these paths were significant in the father's model.

In the father's model, boys' externalizing problem behavior at Time 2 was significantly predicted by the father's earlier harsh parenting (Figure 15). In addition, boys' aggressive behavior at Time 2 significantly predicted externalizing problem behavior at Time 3 for the father's model only.

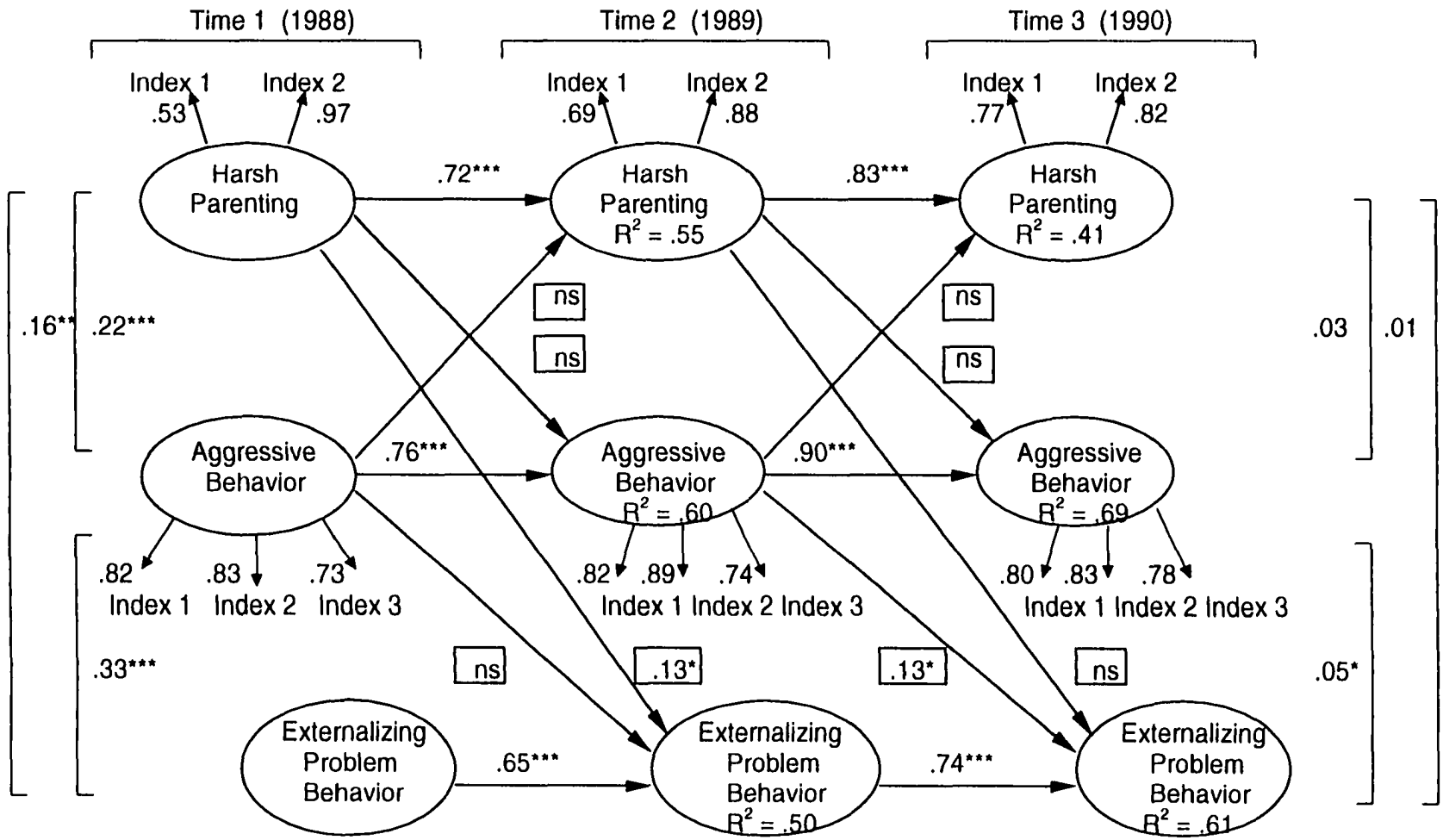
Girls' aggressive behavior did not predict harsh parenting and harsh parenting did not predict aggressive behavior nor externalizing problem behavior (Figure 16 and Figure 17). The only significant path in both the mother's and the father's models was between girls' aggressive behavior at Time 2 and externalizing problem behavior at Time 3.



χ^2 (d.f. = 100) = 152.75
GFI = .92
NFI = .93
NNFI = .96
CFI = .98

* $p < .05$. ** $p < .01$. *** $p < .001$.

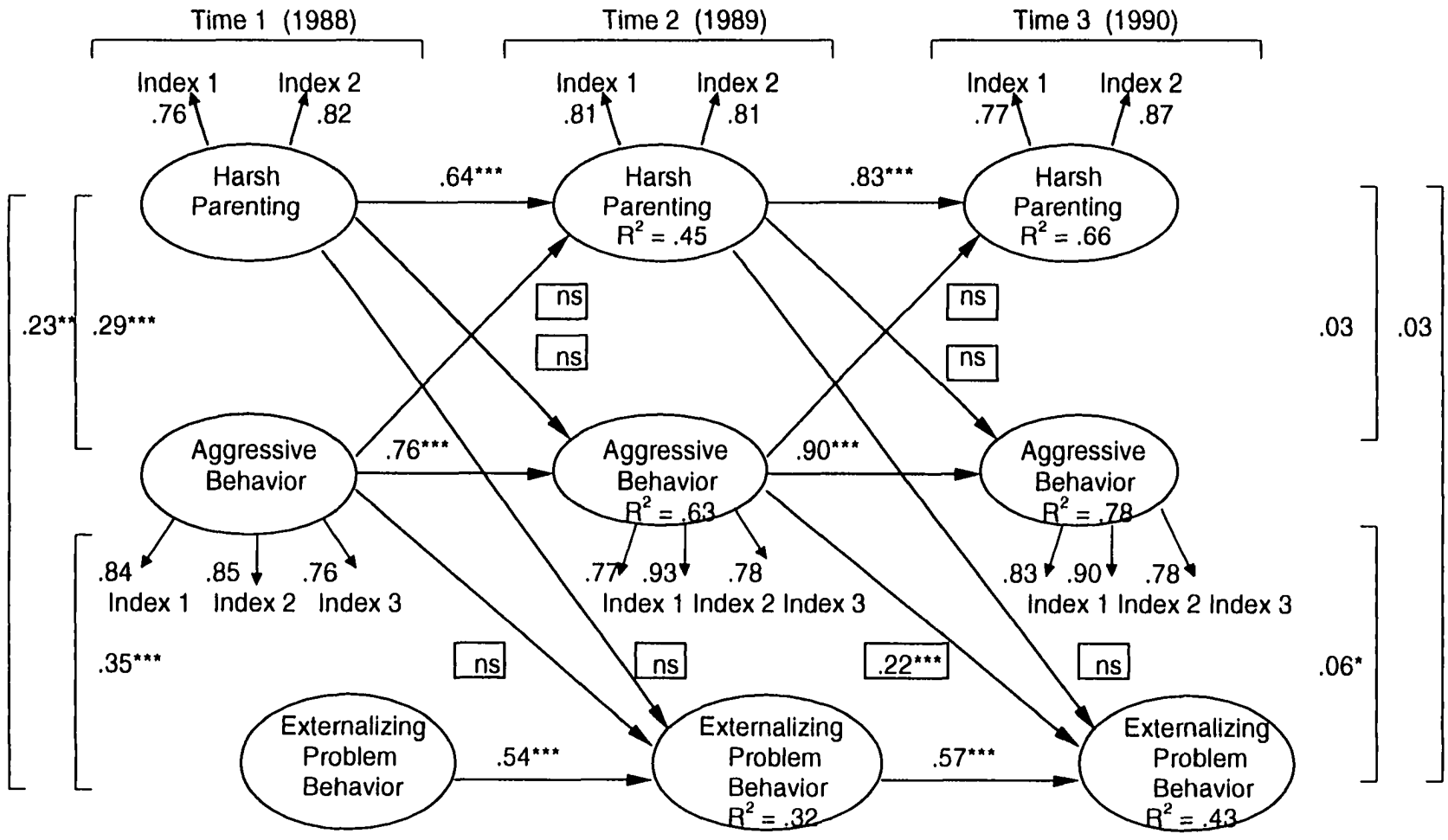
Figure 14. Maximum Likelihood Estimation of the Best-Fitting Model for Boys Only in the Mother's Model (N = 185)



χ^2 (d.f. = 100) = 155.91
GFI = .92
NFI = .92
NNFI = .95
CFI = .97

* p < .05. ** p < .01. *** p < .001.

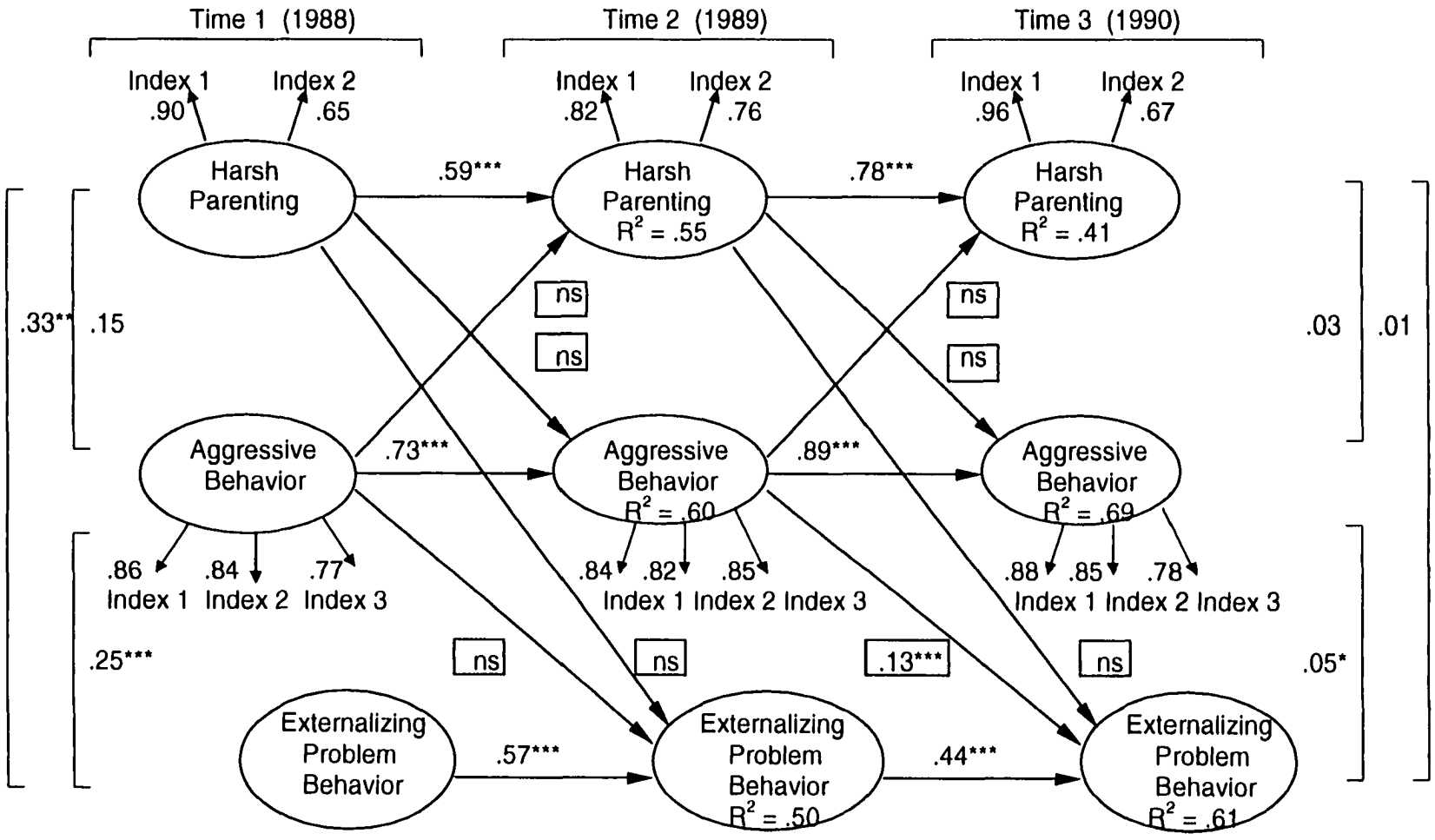
Figure 15. Maximum Likelihood Estimation of the Best-Fitting Model for Boys Only in the Father's Model (N = 180)



χ^2 (d.f. = 100) = 169.49
GFI = .90
NFI = .92
NNFI = .95
CFI = .97

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 16. Maximum Likelihood Estimation of the Best-Fitting Model for Girls Only in the Mother's Model (N = 176)



χ^2 (d.f. = 100) = 144.12
GFI = .92
NFI = .93
NNFI = .97
CFI = .98

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 17. Maximum Likelihood Estimation of the Best-Fitting Model for Girls Only in the Father's Model (N = 178)

CHAPTER 5

DISCUSSION

The parent-child relationship is distinct from other human relationships due to the fact that one party enters the relationship as a mature figure, whereas the other party enters the relationship through birth and matures through the relationship. At a glance, it appears that the relationship is dominated by the mature party with regard to how each influences the other. However, findings from the present study provide evidence that the relationship is obviously reciprocal.

The present study examined a set of linking processes through which the reciprocity between harsh parenting and children's aggressive behavior might be established, separately analyzing maternal and paternal harsh parenting. From a developmental point of view, the hypothesized conceptual model drew upon two different perspectives on how the reciprocity is established in the parent-child relationship, and how the antecedent reciprocity affects later adolescents' externalizing problem behavior.

The first perspective suggests that there will be cross-lagged reciprocity between harsh parenting and aggressive behavior, and that the reciprocity will predict the externalizing problem behavior (Martin 1981; Wasserman et al., 1996). The second perspective suggests that the contemporaneous effect of the reciprocity will be more robust than the cross-lagged effects (Vuchinich et al., 1992). Leading theories in the area of children's antisocial behaviors, such as control systems theory (Bell & Chapman, 1986) and coercion theory (Patterson, 1982) suggest that recent behaviors of others more effectively foster changes in an individual's behaviors than past behaviors of others.

The evaluations of the conceptual model undertaken by employing a series of sequential comparisons of nested and competing models revealed two commonalities

between the mother's model and the father's model. First, high stability of each latent construct over the three different points in time found in the present study adds to results from earlier studies, in showing that high stability exists particularly in boys' aggressive behavior and externalizing problem behavior (Heller et al., 1996; Olweus, 1979; Lerner et al., 1988).

In addition to stability of male adolescents' aggressive and externalizing problem behaviors, the present study provides evidence that high stability exists also in adolescent females' aggressive behavior as well as in their externalizing problem behavior over time. In the research literature, adolescent males' overt and physically aggressive behaviors have been more often addressed; females' aggressive behaviors have been considered more relational than overt (Crick, 1996; Grotpeter & Crick, 1996). Although the two genders might differ in the nature of their aggressive behaviors, which was not directly investigated in the present study, the congruency in high stability of aggressive behavior and externalizing problem behavior for the males and females indicates that once behavioral problems emerge during the development of children, they are highly likely to be stable over time.

Second, findings from the study revealed only a cross-lagged effect of Time 2 aggressive behavior on Time 3 externalizing problem behavior, and a contemporaneous effect of aggressive behavior on externalizing problem behavior at both Times 1 and 3. These results contribute to those from past studies suggesting that there exists a vigorous association of earlier aggressive behavior with later externalizing problem behavior (Dodge et al., 1994; Haapasalo & Tremblay, 1994; Patterson et al., 1996).

However, clear distinctions between the mother's model and the father's model were found when cross-lagged versus contemporaneous reciprocity as well as the gender of children and parents were taken into consideration. With regard to the reciprocity between harsh parenting and aggressive behavior, the results of the present study showed that

children's aggressive behavior influenced mothers' harsh parenting both in cross-lagged and contemporaneous ways. However, the effects existed only between Time 1 and Time 2 for the cross-lagged design, and only within Time 2 for the contemporaneous design.

In terms of the cross-lagged effect, children's aggressive behavior at Time 2 did not make any contribution to harsh parenting at Time 3 when the data for both adolescent males and females were analyzed. However, when only the data of the males were employed, adolescent males' aggressive behavior at Time 1 and Time 2 affected mothers' harsh parenting at Time 2 and Time 3, respectively; fathers' harsh parenting was not influenced by boys' aggressive behaviors at all. Girls' aggressive behavior did not predict harsh parenting by the mothers or fathers at any point in time.

These findings are in accord with previous studies proving that mothers tend to use harsh disciplinary techniques such as threatening or punishing physically when children, especially boys, show physically aggressive behaviors toward them. Furthermore, regardless of the mothers' overall discipline style, the severity of the harsh discipline increases as children's aggressive behavior intensifies (e.g., Patterson et al., 1989; Grusec & Kuczynski, 1980). The findings support coercion theory which argues that parents' negative disciplines are ultimately elicited by children's antisocial behaviors such as aggressive behavior, and escalate along with the intensification of the children's aggressive behavior throughout the continuous interactions between the two parties (Patterson, 1982, 1986).

However, coercion theory's other hypothesis that parents' inept disciplines (i.e., power-assertive discipline) predict children's aggressive behaviors is not supported by the present study. In this study, the effect of harsh parenting on aggressive behavior was not as strong as the effects of children's aggressive behaviors on harsh parenting. Even a

separate evaluation by gender of children did not yield any statistical difference in terms of the effect of harsh parenting on aggressive behavior.

These results, perhaps, provide evidence of a child effect, suggesting as control systems theory (Bell, 1977) does, that it may be true that male adolescents are the ones who take an initiative role in driving encounters with their parents, at least with their mothers (Bell & Chapman, 1986; Lytton, 1990). Especially Lytton (1990) argued that boys with antisocial behavior problems tend to cultivate their deviance by the social exchanges with their parents; consequently, negative parenting patterns are elicited throughout the social exchanges with antisocial boys. The results from the present study may be interpreted as a child's effect in eliciting negative parenting (Lytton, 1990).

However, the present study provides evidence that there also exists parental influence on children in addition to the children's effects on their parents. Findings revealed that only paternal harsh parenting influenced adolescents' externalizing problem behavior in the combined sample of boys and girls. In the combined data set of boys and girls, there was a strong contemporaneous effect of fathers' harsh parenting on externalizing problem behavior. Both at Times 1 and 2, the fathers' harsh parenting effect was significant; however, there was no significant effect of paternal harsh parenting on externalizing problem behavior at Time 3. The cross-lagged design did not reveal any significant effect of fathers' harsh parenting at $p < .05$ in the combined data of boys and girls.

However, when a separate analysis was established for boys and girls with the best-fitting model (i.e., the model examining the cross-lagged reciprocity between harsh parenting and aggressive behavior and the effects of harsh parenting and aggressive behavior on externalizing problem behavior cross-laggedly), Time 1 fathers' harsh parenting was significantly positively associated with male adolescents' externalizing problem behavior; the same analysis with girls only data set did not reveal any significant relation

between paternal harsh parenting and adolescent females' externalizing problem behavior at any point in time.

Finding a significant association between paternal harsh parenting and adolescent children's externalizing problem behavior challenge control systems theory which emphasizes the children's effect on elicitation of negative parenting. The present study provides evidence that parental influences, more precisely paternal influences, exist in the parent-child relationships in addition to the children's effect which was shown in the study as boys' aggressive behavior increasing maternal harsh parenting. The effect of paternal harsh parenting on externalizing problem behavior supports coercion theory arguing that parents' power-assertive disciplines predict children's, especially boys', antisocial behaviors (Patterson, 1982).

Therefore, the findings from the present study appear to support both control systems and coercion theory to some degree. More specifically, the finding of the positive relationship between adolescent children's aggressive behavior and mothers' harsh parenting supports both control system and coercion theory, and the relation between fathers' harsh parenting and externalizing problem behavior supports coercion theory only.

The hypothesis of the superiority of contemporaneous effects over cross-lagged effects, which the two theories share, is supported by the finding that the contemporaneous effect of paternal harsh parenting on externalizing problem behavior was more robust than the cross-lagged effect, although the contemporaneous effect appears to diminish as time goes by as indicated in the changes of the coefficients from .20 ($p < .01$) at Time 1 to .14 ($p < .05$) at Time 2 to .04 (ns) at Time 3.

With respect to the relationship between aggressive behavior and externalizing problem behavior, a strong association between the two was revealed for males and females in both the mother's and the father's models. However, the findings of the positive

relationship between the two do not appear to be consistent across time and across genders of parents and children.

Utilizing the combined sample of boys and girls, in the model examining the contemporaneous relationship between aggressive behavior and externalizing problem behavior in the mother's model, a significant relationship was found at all three times, but in the father's model only at Times 1 and 3. Furthermore, for both the mother's and the father's models, the model investigating the cross-lagged effects of aggressive behavior on externalizing problem behavior found a significant relation between aggressive behavior at Time 2 and externalizing problem behavior at Time 3 only; there was no significant relationship between the two from Time 1 to Time 2.

However, when only the boys' data were used, the mother's model examining the cross-lagged effect of aggressive behavior on externalizing problem behavior did not support the relationship at any point in time, but the relationship existed between Time 2 and Time 3 in the father's model. When only the girls' data were used, the positive relationship between the two was revealed between Time 2 and Time 3 only in both the mother's and the father's models.

These findings add to previous research literature in demonstrating the strong association between earlier aggressive behavior and later behavioral problems such as delinquency (e.g., Haapasalo & Tremblay, 1994; Pulkkinen, 1996). However, it has been suggested that the significant relation between aggressive behavior and externalizing problem behavior in both male and female adolescents should be interpreted with caution.

Dodge (1990) argued that the relation between earlier antisocial behaviors and later conduct disorder is simply continuity of behaviors over time. Therefore, he criticized Lytton's (1990) argument about antisocial boys' pervasive effect on the elicitation of negative parenting, and the argument for the prediction by earlier antisocial behaviors of later

behavioral problems as due to the primacy of a child's effect, as an overstatement of the child's effect. Dodge (1990) argued that the association of earlier behaviors with later conduct disorder was not because the boys in Lytton's study cultivated their deviance by their encounters with their parents, but rather simply that the association constituted continuity in behavior over time. He emphasized that continuity of behavior is not the same as a child effect (Dodge, 1990).

If Dodge's argument is true, the result from the present study, aggressive behavior predicting externalizing problem behavior both longitudinally and concurrently for both male and female adolescents, would be nothing but the continuation of earlier manifestations of antisocial behavior over time. Although the argument of the continuity in antisocial behavior over time is well understood, the results from the present study provide new evidence in suggesting that there is also the influence of fathers' harsh parenting on adolescents' later externalizing problem behavior in addition to the continuity.

The result is evidence that adolescents' externalizing problem behavior is not only a continuity of antecedent aggressive behavior, but also a developmental outcome influenced by ineffective parenting (i.e., paternal harsh parenting). It should be noted that the paternal influence was revealed even with the high stability of aggressive behavior and of externalizing problem behavior. Furthermore, in one of past studies, it has argued that the parental influence on children's problem behavior is more apparent among younger children and that preadolescence would be the last stage where the parental effect may be detected (Vuchinich et al., 1992). However, the present results suggested that the parental effect may not diminish over time; rather, it exists even during adolescence.

With regard to time ordering, the cross-lagged versus the contemporaneous relationship between harsh parenting and aggressive behavior, as well as the cross-lagged versus the contemporaneous effects of the two on externalizing problem behavior need to

be interpreted very cautiously. Both the cross-lagged and the contemporaneous effects were not found consistently over time. Furthermore, the analyses of the competing models, one in the cross-lagged mode and the other in the contemporaneous mode, did not yield any significant difference in terms of overall model fit and in terms of the measurement and structural relationships of the three latent variables in the model.

In terms of lack of consistency across time, several speculations can be developed. The finding of the significant positive association of Time 1 aggressive behavior with Time 2 harsh parenting yields the first speculation. For the hypothesized model analyses, the present study utilized a data set including two cohorts. In the first year of the contacts, one cohort group was in the sixth grade and the other in the eighth grade. From the first year to the second year, the former cohort went through the transition from elementary school to junior high school, while the later cohort experienced the transition from junior to senior high school. It might be the case that when the transitions are completed, families might become stabilized so that parents had less encounters with their children. The nonsignificant relationship between aggressive behavior at Time 2 and harsh parenting at Time 3 supports the speculation that the families in the study might settle down after the transition year.

The second speculation takes the high stability of aggressive behavior into consideration. In the stability model which includes only stability paths for each latent construct between the three different points in time, 85% of variance in aggressive behavior was accounted for only by its stability in the mother's model, and 80% of variance in the father's model. When other structural relationships were developed (i.e., introducing the effects of harsh parenting on aggressive behavior), the proportion of variance in aggressive behavior was not increased. In fact, it declined about 10%. The stability path coefficient from Time 2 to Time 3 was larger than the stability coefficient from Time 1 to Time 2. The increased stability from Time 2 to Time 3 compared with Time 1 to Time 2 may prevent

aggressive behavior from being explained by the other variable, harsh parenting. Therefore, the cross-lagged as well as the contemporaneous reciprocity between harsh parenting and aggressive behavior was found only during the first two-year period.

The effect of boys' aggressive behavior on maternal harsh parenting over time lead to the third speculation. Boys' aggressive behavior has been reported as more overt and stronger than girls' (e.g., Olweus, 1979; Parke & Slaby, 1983). Thus, when only boys were introduced in the analyses of the model, the impact of their aggressive behavior on mothers' harsh parenting was illustrated over time. However, when the two genders were mixed in the data analyses, the effect of aggressive behavior on maternal harsh parenting was shown only between Time 1 and Time 2. It is speculated that the strong effect of boys' aggressive behavior on mothers' harsh parenting was attenuated due to the inclusion of girls' relatively weak aggressive behavior.

The findings that only boys' aggressive behavior affected maternal harsh parenting lead to the following two interpretations. It has been well recognized that a different interactive pattern exists in the parent-child dyad when the two genders of each party are crossed (Conger et al., 1992, 1993; Weiss & Schwarz, 1996). The findings from this study can also be interpreted in line with those past studies. However, the mother's model and the father's model in this analysis were developed by different combinations of the informants. In the mother's model, mothers reported target children's aggressive behavior, and fathers reported target children's externalizing problem behavior; in the father's model, the opposite was the case.

There is wide agreement that mothers are better reporters than fathers of children's behavior (McFadyen-Ketchum et al., 1996; Pettit et al., 1993). When the indicators of aggressive behavior and externalizing problem behavior were composed of the fathers' report and mothers' report, the initial confirmatory factor analysis found a huge discrepancy

between the two factor loadings; the factor loading of the fathers' report was about two times lower than the one of the mothers' report, indicating that the mothers' report was a more reliable measure. The discrepancy in the fathers' and the mothers' reports may have been represented in the form of less consistent findings.

Attention must be paid to the present study's finding of replicating patterns between the cross-lagged and the contemporaneous analyses in overall model estimation. The two models, one with the cross-lagged reciprocity between aggressive behavior and harsh parenting including the cross-lagged effect of the reciprocity on externalizing problem behavior, and the other with the contemporaneous reciprocity of the two and the contemporaneous effect on externalizing problem behavior, turned out to be identical. There were trivial differences in the chi-square statistics due to the minor difference in the correlational structure among the latent constructs for the appropriate data analyses. However, the factor loading of the indicators of each latent construct, the stability paths, and the coefficients of the structural paths among the three latent constructs were identical.

Although the hypothesis that there would exist a significant difference between the cross-lagged and the contemporaneous relationships among the variables in the model estimation may be conceptually arguable, the statistical results showed that the two models were a linear transformation of each other; the two effects based on time ordering in the conceptual model were identical. Lorenz, Conger, Simons, and Whitbeck (1995) demonstrated that in a just-identified 2 wave-2 variable model the contemporaneous reciprocal paths between the two variables can be exactly transformed from the cross-lagged paths between the same two variables through a mathematical function, which is composed of the variances and covariances of the variables (for a review, see Lorenz et al., 1995). The finding from the study of Lorenz et al. (1995) may be applied to the present

study, even though the conceptual model in this analysis includes three waves and three different variables.

Limitations exist in this study. Although the primary purpose of the study was to examine reciprocity of harsh parenting and aggressive behavior and its impact on adolescents' externalizing problem behavior, the original study, from which the sample for the present study was taken, was not specifically geared toward an investigation of the parent-child transactional relationship. Thus, in terms of measurement, different results would have appeared if any direct observation of the parent-target child interaction was available, rather than each informant (i.e., father, mother, and target child) filling out the same questionnaire at three different points in time within a 3 year interval.

Furthermore, it hardly can be expected that parents' disciplinary skills would be significantly changed from one point in time to the next unless the parents currently receive treatment services in order to improve their inept parenting skills (Wasserman et al., 1996). Moreover, children's perceptions of their parents are highly likely to remain stable over time. The high stability of harsh parenting of both mothers and fathers reported by the target child supports this speculation.

It should be also noted that the present study was conducted with a nonclinical sample. In addition, the majority of families either lived on farms or in rural areas. Thus, the findings from the study must be generalized with caution when applied to other samples, particularly to samples taken from inner cities or to clinical samples.

Although there are clear limitations in the present study which need to be improved such as developing a better measurement to assess the reciprocal interactions between parents and children more sufficiently, the study added empirical evidence of the reciprocity in the field where the empirical studies examining the reciprocal relationship between parents and children at multiple points in time have been relatively sparse. The present

study examined the reciprocity between harsh parenting and aggressive behaviors, and attempted to trace the reciprocity over time using a three-year longitudinal study in a comprehensive model fashion.

In summary, the findings of this study provide additional evidence of high stability of aggressive behavior and externalizing problem behavior, as well as of harsh parenting. Further, the results of this study provide important evidence for the significance of the reciprocity between harsh parenting and children's aggressive behavior in addition to the effects of their antecedent reciprocity on adolescents' later externalizing problem behavior.

However, the direction of influences was dependent upon both parents' and children's gender in the present study. Only Time 2 harsh parenting was significantly influenced by the combined data set of female and male adolescents' aggressive behavior at Time 1. Only male adolescents' aggressive behavior turned out to affect mothers' harsh parenting only over time; female adolescents' aggressive behavior did not make any significant difference in parents' harsh parenting at any point in time.

The finding of the significant role of adolescent males' aggressive behavior in increasing maternal harsh parenting provides evidence that mothers of male adolescents may be placed in a vulnerable spot where they are heavily influenced by their sons' aggressive behaviors. Patterson (1980) also reported mothers of aggressive boys as the victims of their male children's antisocial behaviors based on his observations of the interactions between the two. Although the primary purpose of the present study was not an examination of difficulties of mothers in disciplining their aggressive boys, an investigation of several aspects of maternal adjustment to their difficult children is worthy.

Fathers were not influenced by their children's aggressive behavior; rather, fathers' harsh parenting promoted their adolescent children's externalizing problem behavior. The different patterns in the parent-child relationship due to gender of parents imply that the

examination of parent-child relationships needs to be performed simultaneously with both parents' parenting. The exclusion of fathers' contribution to parenting research has been pointed out in several past research studies. The present study suggests that the inclusion of fathers in research has a more important meaning than simply comparing them with mothers. The findings from the study should be a ground for further endeavor to identify different mechanism of fathers' parenting from mechanism of mothers' parenting.

Even further, deciphering whether or not other aspects of parenting and children (e.g., positive parenting and children's compliance) would lead to a similar reciprocity found in the present study should be one of the main focuses of future studies. Investigating the reciprocity applied to different combinations of parenting and children's developmental aspects (i.e., positive parenting with negative aspect of children, positive parenting with positive aspect of children, negative parenting with positive aspect of children) will enlarge the understanding of the reciprocity in the parent-child relationship.

REFERENCES CITED

Achenbach, T. M. & Edelbrock, C. S. (1979). The Child Behavior Profile II: Boys aged 12-16 and girls aged 6-11 and 12-16. Journal of Consulting and Clinical Psychology, 47, 223-233.

Ambert, A. (1992). The effect of children on parents. Binghamton, NY: The Haworth Press.

Babbie, E. (1995). The practice of social research (7th ed.). Belmont, CA: Wadsworth.

Baldwin, J. M. (1906). Social and ethnical interpretations in mental development. New York: Macmillan.

Bartz, K. W. & Levine, E. S. (1978). Child rearing by Black parents: A description and comparison to Anglo and Chicano parents. Journal of Marriage and the Family, 40, 709-719.

Baumrind, D. (1967). Child care practices anteceding 3 patterns of preschool behavior. Genetic Psychology Monographs, 75, 43-88.

Baumrind, D. (1971). Current patterns of parental authority. Developmental Psychology Monographs, 4 (1, pt. 2).

Baumrind, D. (1972). An exploratory study of socialization effects on Black children: Some Black-White comparisons. Child Development, 43, 261-267.

Baumrind, D. (1988). Rearing competent children. In W. Damon (Ed.), Child development today and tomorrow (pp. 349-378). San Francisco, LA: Jossey-Bass.

Baumrind, D. (1991). Effective parenting during the early adolescent transition. In P. A. Cowan and E. M. Hetherington (Eds.), Advances in family research (Vol. 2). Hillsdale, NJ: Lawrence Erlbaum Associates.

Baumrind, D. (1993). The average expectable environment is not good enough: A response to Scarr. Child Development, 64, 1299-1317.

Becker, W. C. (1964). Consequences of different kinds of parental discipline. In M. L. Hoffman & L. W. Hoffman (Eds.), Review of child development research (Vol. 1). New York, NY: Russell Sage Foundation.

Bell, R. Q. (1968). A reinterpretation of the direction of effects in studies of socialization . Psychological Review, 75, 81-85.

Bell, R. Q. (1977). Socialization findings re-examined. In R. Q. Bell & R. V. Harper (Eds.), Child effects on adults (pp. 53-84). Hillsdale, NJ: Lawrence Erlbaum Associates.

Bell, R. Q. & Chapman, M. (1986). Child effects in studies using experimental or brief longitudinal approaches to socialization. Developmental Psychology, 22, 595-603.

Belsky, J. (1984). The determinants of parenting: A process model. Child Development, 55, 83-96.

Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient mood and daily hassles. Journal of Personality, 63, 905-929.

Belsky, J., Youngblade, L., Rovine, M., & Volling, B. (1991). Patterns of marital change and parent-child interaction. Journal of Marriage and the Family, 53, 487-498.

Bentler, P. M. (1990). Comparative fit indexes in structural models. Psychological Bulletin, 107, 238-246.

Bentler, P. M. & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin, 88, 588-606

Bollen, K. A. (1989). Structural equations with latent variables. New York: Wiley.

Bollen, K. A. (1990). Overall fit in covariance structure models: Two types of sample size effects. Psychological Bulletin, 107, 256-259.

Bornstein, M. H. (Ed.) (1989). Maternal responsiveness: Characteristics and consequences. San Francisco: Jossey-Bass.

Bourn, D. F. (1993). Over-chastisement, child non-compliance and parenting skills: A behavioral intervention by a family center social worker. British Journal of Social Work, 23, 481-499.

Brody, G. H., Arias, I., & Fincham, F. D. (1996). Linking marital and child attributions to family processes and parent-child relationships. Journal of Family Psychology, 10, 408-421.

Cairns, R. B., Santoyo, C., & Holly, K. A., (1994). Aggressive escalation: Toward a developmental analysis. In M. Potegal & J. F. Knutson (Eds.), Biological and social Processes in dyads and groups, (pp. 227-254). Hillsdale, NJ: Lawrence Erlbaum Associates.

Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. Child Development, 65, 1111-1119.

Clark-Lempers, D. S., Lempers, J. D., & Netusil, A. J. (1990). Family financial stress, parental support, and young adolescents' academic achievement and depressive symptoms. Journal of Early Adolescence, 10, 21-36.

Cohen, P. & Brook, J. (1987). Family factors related to the persistence of psychopathology in childhood and adolescence. Psychiatry, 50, 332-345.

Collins, W. A. (1990). Parent-child relationships in the transition to adolescence: Continuity and change in interaction, affect, and cognition. In R. Montemayor, G. Adams, & T. Gullotta (Eds.), Advances in adolescent development: From childhood to adolescence: A transitional period? (Vol. 2, pp. 85-106). Beverly Hills, CA: Sage.

Collins, W. A. & Russell, G. (1991). Mother-child and father-child relationships in middle childhood and adolescence: A developmental analysis. Developmental Review, 11, 99-136.

Conger, R. D., Conger, K. J., Elder, G. H., Lorenz, F. O., Simons, F. L., & Whitebeck, L. B. (1992). A family process model of economic hardship and adjustment of early adolescent boys. Child Development, 63, 526-541.

Conger, R. D., Conger, K. J., Elder, G. H., Lorenz, F. O., Simons, F. L., & Whitebeck, L. B. (1993). Family economic stress and adjustment of early adolescent girls. Developmental Psychology, 29, 206-219.

Conger, R. D., Lorenz, F. O., Elder, G. H., Melby, J. N., Simons, R. L., & Conger, K. J. (1991). A process model of economic pressure and early adolescent alcohol use. Journal of Early Adolescence, 11, 430-449.

Coopersmith, S. (1967). The antecedents of self-esteem. San Francisco: W. H. Freeman & Co.

Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. Child Development, 67, 2317-2327.

Crockenberg, S. & Litman, C. (1990). Autonomy as competence in 2-year-olds: maternal correlates of child defiance, compliance, and self-assertion. Developmental Psychology, 26, 961-971.

Darling, N. & Steinberg, L. (1993). Parenting style as context: An integrative model. Psychological Bulletin, 113, 487-496.

Deal, J. E. (1996). Marital conflict and differential treatment of siblings. Family Process, 35, 333-346.

Dishion, T. J. (1990). The family ecology of boys' peer relations in middle childhood. Child Development, 61, 874-892.

Dix, T. (1993). Attributing disposition to children: An interactional analysis of attribution in socialization. Personality and Social Psychology Bulletin, 19, 633-643.

Dix, T. & Lochman, J. E. (1990). Social cognition and negative reactions to children: A comparison of mothers of aggressive and nonaggressive boys. Journal of Social and Clinical Psychology, 9, 418-438.

Dix, T., Ruble, D. N., & Zambarano, R. J. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. Child Development, 60, 1373-1391.

Dodge, K. A. (1990). Nature versus nurture in childhood conduct disorder: It is time to ask a different question. Developmental Psychology, 26, 698-701.

Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Socialization mediators of the relation between socioeconomic status and child conduct problems. Child Development, 65, 649-665.

Dornbusch, S. M., Ritter, P., Leiderman, P., Roberts, D., & Fraleigh, M. (1987). The relation of parenting style to adolescent school performance. Child Development, 58, 1244-1257.

Farrington, D. P. (1991). Childhood aggression and adult violence: Early precursors and later life outcomes. In D. J. Pepler & K. H. Rubin (Eds.), The development and treatment of childhood aggression (pp. 5-29). Hillsdale, NJ: Lawrence Erlbaum Associates.

Fuligni, A. J. & Eccles, J. S. (1993). Perceived parent-child relationships and early adolescents' orientation toward peers. Developmental Psychology, 29, 622-632.

Gable, S., Belsky, J., & Crnic, K. (1992). Marriage, parenting, and child development: Progress and prospects. Journal of Family Psychology, 5, 276-294.

Glasgow, K. L., Dornbusch, S. M., Troyer, L., Steinberg, L., & Ritter, P. L. (1997). Parenting styles, adolescents' attributions, and educational outcomes in nine heterogeneous high schools. Child Development, 68, 507-529.

Goldberg, W. A., Greenberger, E., & Nagel, S. K. (1996). Employment and achievement: Mother's work involvement in relation to children's achievement behaviors and mothers' parenting behaviors. Child Development, 67, 1512-1527.

Grotpeter, J. K. & Crick, N. R. (1996). Relational aggression, overt aggression, and friendship. Child Development, 67, 2328-2338.

Grusec, J. E. & Kuczynski, L. (1980). Direction of effect in socialization: A comparison of the parent's versus the child's behavior as determinants of disciplinary tactics. Developmental Psychology, 16, 1-9.

Haapasalo, J. & Tremblay, R. E. (1994). Physically aggressive boys from ages 6 to 12: Family background, parenting behavior, and prediction of delinquency. Journal of Consulting and Clinical Psychology, 62, 1044-1052.

Harold, G. T. & Conger, R. D. (1997). Marital conflict and adolescent distress: The role of adolescent awareness. Child Development, 68, 333-350.

Hauser, S. T., Powers, S. I., & Noam, G. G. (1991). Adolescents and their families: Paths of ego development. New York: Free Press.

Heller, T. L., Baker, B. L., Henker, B., Hinshaw, S. P. (1996). Externalizing behavior and cognitive functioning from preschool to first grade: Stability and predictors. Journal of Clinical Child Psychology, 25, 376-387.

Hetherington, E. M. & Martin, B. (1986). Family factors and psychopathology in childhood. In H. C. Quay (Ed.), Psychopathological disorders of childhood (3rd ed., pp. 332-390). New York: Wiley.

Hertzog, C. & Nesselroade, J. R. (1987). Beyond autoregressive models: Some implications of the trait-state distinction for the structural modeling of developmental change. Child Development, 58, 93-109.

Hollingshead, A. B. (1957). Four factor index of social status. Unpublished manuscript, Department of Sociology, Yale University, New Haven, Connecticut.

Holmbeck, G. N. & O'Donnell, K. (1991). Discrepancies between perceptions of decision-making and behavioral autonomy. In R. L. Paikoff (Ed.), Shared views in the family during adolescence: New directions for child development (No. 51, pp. 51-69). San Francisco: Jossey-Bass.

Holmbeck, G. N., Paikoff, R. L., & Brooks-Gunn, J. (1995). In M. Bornstein (Ed.), Handbook of parenting (Vol. 1, pp. 91-118). Hillsdale, NJ: Lawrence Erlbaum Associates.

Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., Walder, L. O. (1984). Stability of aggression over time and generations. Developmental Psychology, 20, 1120-1134.

Jöreskog, K. G. & Sörbom, D. (1996). LISREL VIII: User's Reference Guide. Chicago, IL: Scientific Software Incorporated.

Kendler, K. S., Sham, P. C., & MacLean, C. J. (1997). The determinants of parenting: An epidemiological, multi-informant, retrospective study. Psychological Medicine, 27, 549-563.

Kerig, P. K., Cowan, P. A., & Cowan, C. P. (1993). Marital quality and gender differences in parent-child interaction. Developmental Psychology, 29, 931-939.

Kochanska, G. & Aksan, N. (1995). Mother-child mutually positive effect, the quality of child compliance to requests and prohibitions, and maternal control as correlates of early internalization. Child Development, 66, 236-254.

Kochanska, G., Clark, L. A., & Goldman, M. S. (1997). Implications of mothers' personality for their parenting and their young children's development outcomes. Journal of Personality, 65, 387-420.

Kupersmidt, J. B. & Coie, J. D. (1990). Preadolescent peer status, aggression, and school adjustment as predictors of externalizing problems in adolescence. Child Development, 61, 1350-1362.

Kurdek, L. A. (1996). Parenting satisfaction and marital satisfaction in mothers and fathers with young children. Journal of Family Psychology, 10, 331-342.

Lay, K. L., Waters, E. & Park, K. A. (1989). Maternal responsiveness and child compliance: The role of mood as mediator. Child Development, 60, 1405-1411.

Lempers, J. D. & Clark-Lempers, D. (1990). Family economic stress, maternal and paternal support and adolescent distress. Journal of Adolescence, 13, 217-229.

Lempers, J. D. & Clark-Lempers, D. (1997). Economic hardship, family relationships, and adolescent distress: An evaluation of a stress-distress mediation model in mother-daughter and mother-son dyads. Journal of Adolescence, 32, 339-356.

Lempers, J. D., Clark-Lempers, D., & Simons, R. L. (1989). Economic hardship, parenting, and distress in adolescence. Child Development, 60, 25-39.

Lerner, J. V., Hertzog, C., Hooker, K. A., Hassibi, M., & Thomas, A. (1988). A longitudinal study of negative emotional states and adjustment from early childhood through adolescence. Child Development, 59, 356-366.

Lewis, C. C. (1981). The effects of parental firm control: A reinterpretation of the findings. Psychological Bulletin, 90, 547-563.

Loeber, R. & Dishion, T. J. (1983). Early predictors of male adolescent delinquency: A review. Psychological Bulletin, 94, 68-99.

Londerville, S. & Main, M. (1981). Security of attachment, compliance, and maternal training methods in the second year of life. Developmental Psychology, 17, 289-299.

Lorenz, F. O., Conger, R. D., Simons, R. L., & Whitbeck, L. B. (1995). The effects of unequal covariances and reliabilities on contemporaneous inference: The case of hostility and marital happiness. Journal of Marriage and the Family, 57, 1049-1064.

Lytton, H. (1990). Child and parent effects in boys' conduct disorder: A reinterpretation. Developmental Psychology, 26, 683-697.

Maccoby, E. E. & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In P. H. Mussen (Series Ed.) & E. M. Hetherington (Vol. Ed.), Handbook of child psychology: Vol. 4. Socialization, personality, and social development (4th ed., pp. 1-101). New York: Wiley.

Martin, J. A. (1981). A longitudinal study of the consequences of early mother-infant interaction: A microanalytic approach. Monographs of the Society for Research in Child Development, 46.

McCord, J. (1990). Problem behaviors. In S. S. Feldman & G. L. Elliott (Eds.), At the threshold: The developing adolescent (pp. 413-430). Cambridge, MA: Harvard University Press.

McFadyen-Ketchum, S. A., Bates, J. E., Dodge, K. A., & Pettit, G. S. (1996). Patterns of change in early childhood aggressive-disruptive behavior: Gender differences in predictions from early coercive and affectionate mother-child interactions. Child Development, 67, 2417-2433.

McGillicuddy-De Lisi, A. V. & Sigel, I. E. (1995). Parental beliefs. In M. Bornstein (Ed.), Handbook of parenting (Vol. 3, pp. 333-359). Hillsdale, NJ: Lawrence Erlbaum Associates.

McLoyd, V. C. (1989). Socialization and development in a changing economy: The effects of paternal job and income loss on children. American Psychologist, 44, 293-302.

Melby, J. N, Conger, R. D., Conger, K. J., & Lorenz, F. O. (1993). Effect of parental behavior on tobacco use by young male adolescents. Journal of Marriage and the Family, 55, 439-454.

Miller, N. B., Cowan, P. A., Cowan, C. P., Hetherington, E. M., & Clingempeel, W. G. (1993). Externalizing in preschoolers and early adolescents: A cross-study replication of a family model. Developmental Psychology, 29, 3-18.

Minton, C., Kagan, J., & Levine, J. A. (1971). Maternal control and obedience in the two-year-old. Child Development, 42, 1873-1894.

Nucci, L. (1994). Mothers' beliefs regarding the personal domain of children. In J. G. Smetana (Ed.), New directions for Child Development (Vol. 66), Beliefs about parenting: Origins and developmental implications (pp. 81-97).

Olweus, D. (1979). Stability of aggressive reaction patterns in males: A review. Psychological Bulletin, 86, 852-875.

Olweus, D. (1980). Familial and temperamental determinants of aggressive behavior in adolescent boys: A causal analysis. Developmental Psychology, 16, 644-660.

Parke, R. D. & Slaby, R. G. (1983). The development of aggression. In P. H. Mussen (Series Ed.) & E. M. Hetherington (Vol. Ed.), Handbook of child psychology: Vol. 4. Socialization, personality, and social development (4th ed., pp. 547-642). New York: Wiley.

Parpal, M. & Maccoby, E. E. (1985). Maternal responsiveness and subsequent child compliance. Child Development, 56, 1326-1334.

Paulson, S. E. (1994). Relations of parenting style and parental involvement with ninth-grade students; achievement. Journal of Early Adolescence, 14, 250-267.

Patterson, G. R. (1980). Mothers: The unacknowledged victims. Monographs of the Society for Research in Child Development, 45, 1-64.

Patterson, G. R. (1982). Coercive family process. Eugene, OR: Castalia Press.

Patterson, G. R. (1986). Performance models for antisocial boys. American Psychologist, 41, 432-444.

Patterson, G. R., Bank, L., & Stoolmiller, M. (1990). The preadolescent's contributions to disrupted family process. In R. Montemayor, G. R. Adams, & T. P. Gullotta (Eds.), From childhood to adolescence: A transitional period? (pp. 107-133).

Patterson, G. R., DeBaryshe, B. D. & Ramsey, E. (1989). A developmental perspective on antisocial behavior. American Psychologist, 44, 329-335.

Peterson, B. E., Smirles, K. A., Wentworth, P. A. (1997). Generativity and authoritarianism: Implications for personality, political involvement, and parenting. Journal of Personality and Social Psychology, 72, 1202-1216.

Pettit, G. S. (1997). The developmental course of violence and aggression. Anger, Aggression, and Violence, 20, 283-299.

Pettit, G. S., Bates, J. E., & Dodge, K. A. (1997). Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. Child Development, 68, 908-923.

Pulkkinen, L. (1996). Proactive and reactive aggression in early adolescence as precursors to anti- and prosocial behavior in young adults. Aggressive Behavior, 22, 241-257.

Repetti, R. L. & Wood, J. (1997). Effects of daily stress at work on mothers' interactions with preschoolers. Journal of Family Psychology, 11, 90-108.

Roberts, G. C., Block, J. H., & Block, J. (1986). Continuity and change in parents' child-rearing practices. Child Development, 55, 486-597.

Rothbaum, F. & Crockenberg, S. (1995). Maternal control and two-year-olds' compliance and defiance. International Journal of Behavioral Development, 18, 193-210.

Rubin, K. H. (1993). The Waterloo Longitudinal Project: Correlates and consequences of social withdrawal from childhood to adolescence. In K. H. Rubin & J. Asendorpf (Eds.), Social withdrawal, inhibition, and shyness in childhood (pp. 291-314). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rubin, K. H., Stewart, S. L., & Chen, X. (1995). Parents of aggressive and withdrawn children. In M. H. Bornstein (Ed.), Handbook of parenting, Vol. 1: Children and parenting (pp. 255-284).

Russell, A. (1997). Individual and family factors contribution to mothers' and fathers' positive parenting. International Journal of Behavioral Development, 21, 111-132.

Scarr, S. & McCartney, K. (1983). How people make their own environments: A theory of genotype-environment effects. Child Development, 54, 424-435.

Schaefer, E. S. (1959). A circumplex model for maternal behavior. Journal of Abnormal and Social Psychology, 59, 226-235.

Schaefer, E. S. (1965). Children's reports of parental behavior: An inventory. Child Development, 36, 413-426.

Shaw, D. S. & Bell, R. Q. (1993). Developmental theories of parental contributors to antisocial behavior. Journal of Abnormal Child Psychology, 21, 493-518.

Sheeran, T., Marvin, R. S., Pianta, R. C. (1997). Mothers' resolution of their child's diagnosis and self-reported measures of parenting stress, marital relations, and social support. Journal of Pediatric Psychology, 22, 197-212.

Simons, R. L., Lorenz, F, O., Conger, R. D., & Wu, C. (1992). Support from spouse as mediator and moderator of the disruptive influence of economic strain on parenting. Child Development, 63, 1282-1301.

Simons, R. L., Lorenz, F, O., Wu, C., & Conger, R. D. (1993). Social network and marital support as mediators and moderators of the impact of stress and depression on parental behavior. Developmental Psychology, 29, 368-381.

Skinner, M. L., Elder, G. H., Conger, R. D. (1992). Linking economic hardship to adolescent aggression. Journal of Youth and Adolescence, 21, 259-276.

Steinberg, L. (1988). Reciprocal relation between parent-child distance and pubertal maturation. Developmental Psychology, 24, 122-128.

Steinberg, L. (1990). Interdependence in the family: Autonomy, conflict, and harmony in the parent-adolescent relationship. In S. S. Feldman & G. L. Elliott (Eds.), At the threshold: The developing adolescent (pp. 255-276). Cambridge, MA: Harvard University Press.

Steinberg, L., Elmen, J. D., & Mounts, N. S. (1989). Authoritative parenting, psychosocial maturity, and academic success among adolescents. Child Development, 60, 1424-1436.

Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. Child Development, 65, 754-770.

Steinberg, L., Lamborn, S., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. Child Development, 63, 1266-1281.

Straus, M. A. & Connelly, D. A. (1993). Corporal punishment of adolescents by American parents. Youth & Society, 24, 419-442.

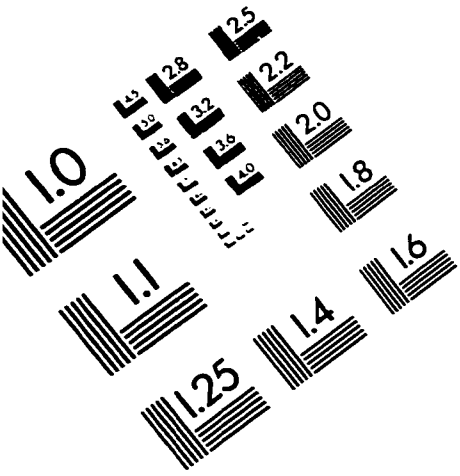
Vuchinich, S., Bank, L., Patterson, G. R. (1992). Parenting, peers, and the stability of antisocial behavior in preadolescent boys. Developmental Psychology, 28, 510-521.

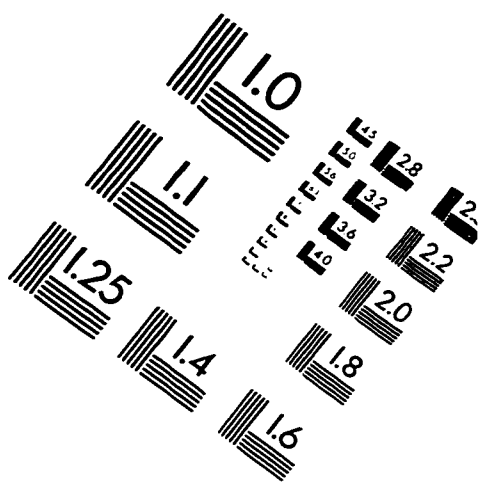
Wahler, R. G. (1990). Who is driving the interactions? A commentary on "Child and parent effects in boys' conduct disorder." Developmental Psychology, 26, 702-704.

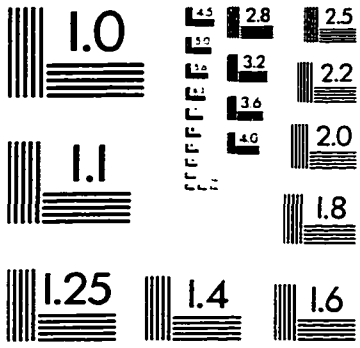
Wasserman, G. A., Miller, L. S., Pinner, E., & Jaramillo, B. (1996). Parenting predictors of early conduct problems in urban, high-risk boys. Journal of American Academy of Child and Adolescent Psychiatry, 35, 1227-1236.

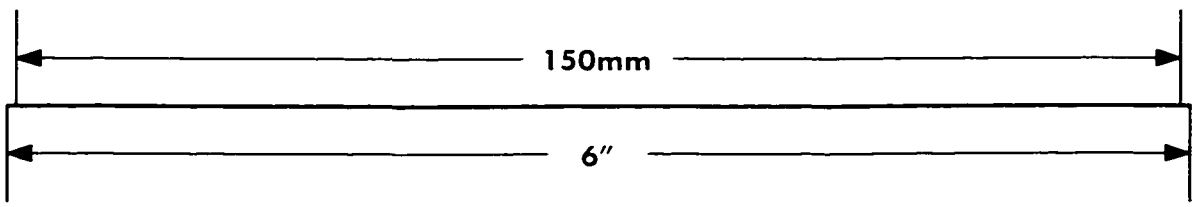
Weiss, L. H. & Schwarz, J. C. (1996). The relationship between parenting types and older adolescents' personality, academic achievement, adjustment, and substance use. Child Development, 67, 2101-2114.

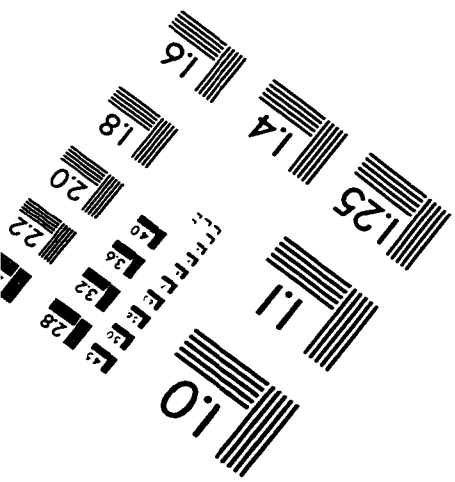
IMAGE EVALUATION
TEST TARGET (QA-3)

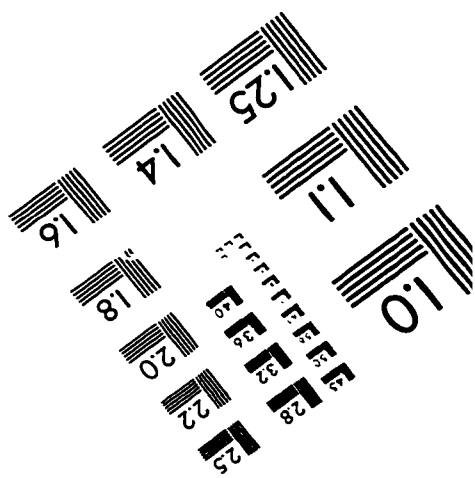












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989